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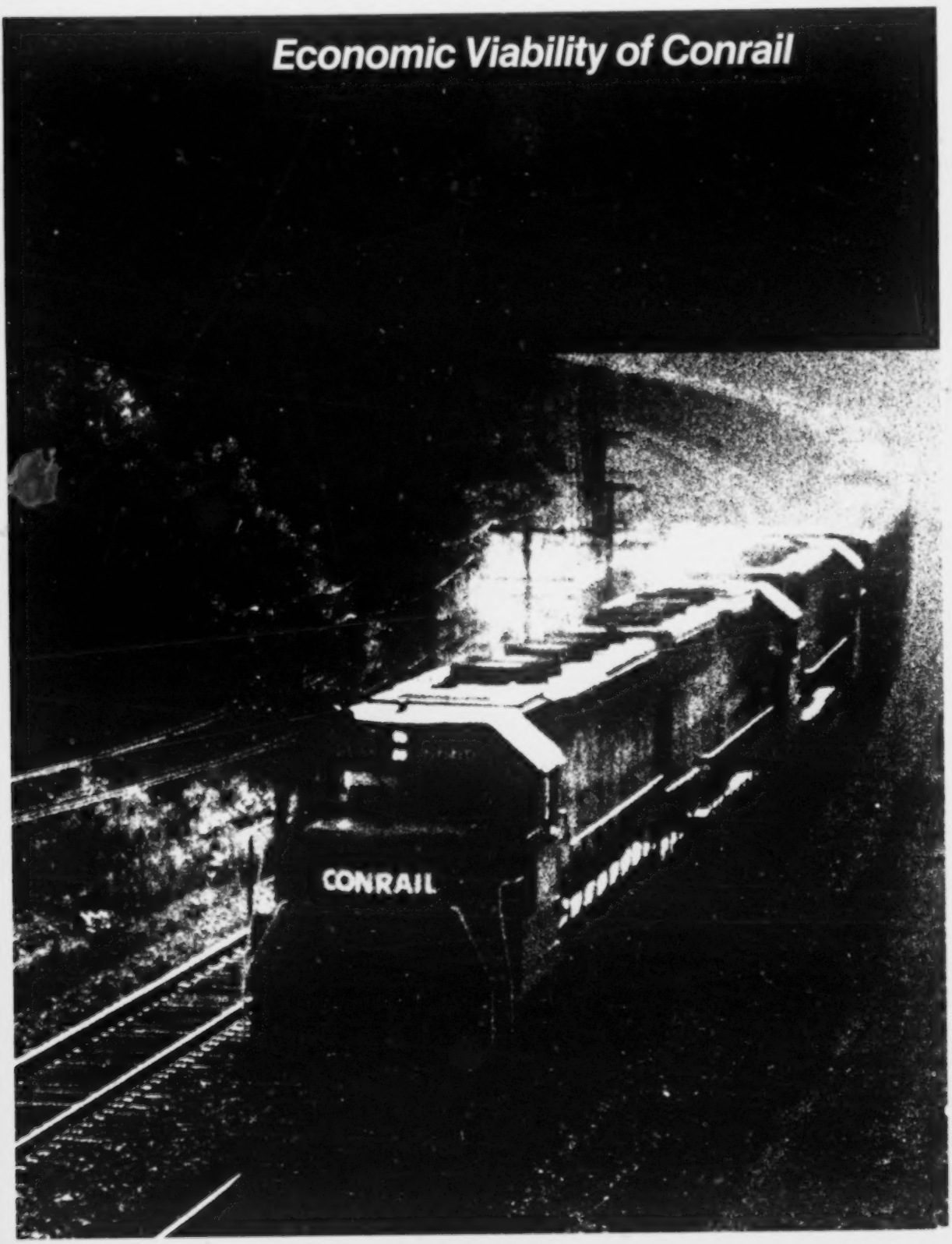
Economic Viability of Conrail



A SPECIAL STUDY

ECONOMIC VIABILITY OF CONRAIL

The Congress of the United States
Congressional Budget Office

NOTES

All dollar amounts are current dollars unless otherwise noted.

All years are calendar years.

Numbers in text and tables may not add because of rounding.

PREFACE

Under the terms of the Northeast Rail Service Act of 1981, the Department of Transportation is seeking ways to return the Consolidated Rail Corporation, or Conrail, to the private sector. The future viability of Conrail as an ongoing enterprise will affect both the choice of a manner in which to divest the government of this firm, and perceptions of its economic value. This special study, requested by the Subcommittee on Commerce, Transportation, and Tourism of the House Committee on Energy and Commerce, investigates these issues. In keeping with the Congressional Budget Office's mandate to provide objective and nonpartisan analysis, the report makes no recommendations.

Mark R. Dayton of CBO's Natural Resources and Commerce Division wrote the report and constructed the model for the analysis, with the assistance of Julie Goldman. The study was conducted under the supervision of Everett M. Ehrlich. Mark E. Steitz made valuable contributions at early stages of the project. Linden Smith of the Joint Committee on Taxation, Evan Allen of the U.S. Railway Association, and Thomas J. Lutton and Jennifer Solomon of CBO all provided valuable comments and assistance. Many outside reviewers, including individuals from the railroad industry, made helpful comments and criticisms. Sherry Snyder edited the manuscript, and Gwen Coleman and Angela Z. McCollough prepared the report for publication.

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SUMMARY

The Consolidated Rail Corporation, or Conrail, was formed from the remnants of seven bankrupt railroads in the Northeast and Midwest. It began operations on April 1, 1976. An infusion of government funds--in total, over $10 billion in constant dollars--has helped to restore Conrail to profitability. The system produced $442 million in net income in 1985.

The Northeast Rail Service Act of 1981 (NERSA) directed the Department of Transportation (DOT) to examine ways of returning Conrail to private-sector ownership. Specifically, it required DOT to initiate a sale of Conrail if it became profitable. Accordingly, DOT first solicited proposals for the sale of Conrail in 1983, and in 1985, announced its intention to sell Conrail to the Norfolk Southern Corporation, a railroad holding company that controls the Norfolk and Western Railway and the Southern Railway. The proposal to sell Conrail to Norfolk Southern, however, has recently been rescinded.

The Department of Transportation chose a private sale to the Norfolk Southern Corporation over the alternatives of other private bids or a competitive stock offering because it believed that Conrail required the resources and expertise of a larger railroad company in order to guarantee that it would remain a viable railroad. The agreement with Norfolk Southern contained numerous covenants designed to ensure service in the Conrail region for five years after the sale. But if Conrail were a profitable firm in that period, these covenants would have been largely redundant. Thus, the relative merits of various approaches to the sale of Conrail hinge on whether Conrail is now a viable private enterprise. This paper investigates that issue and attempts to appraise Conrail's value. Its principal findings are that Conrail appears to be a viable independent enterprise over the next decade under a broad range of conditions in both the economy in general and the railroad industry in particular, and that the value of the government's current holdings could range from $1.1 billion to $5.6 billion.

THE VIABILITY OF CONRAIL

This study employed the following criteria in analyzing Conrail's potential to continue as an independent corporation over the next 10 years (1986-1995):

- In the absence of extensive economic dislocations in its service region, Conrail should haul a level of traffic commensurate with its recent experience.

- Its net operating income should remain positive and at a level consistent with its traffic base.

- Its capital investment should be sufficient to maintain the existing quality of its track and equipment.

- Its net income and cash flow should be sufficient to meet capital, debt, and dividend payments.

Each of these criteria is discussed below.

Traffic

In 1985, Conrail hauled 181 million tons of freight. Under a set of base-case assumptions, Conrail is projected to haul 194 million tons in 1990 and 193 million tons in 1995. This base case is built around the Congressional Budget Office's (CBO's) macroeconomic forecast as detailed in *The Economic and Budget Outlook: Fiscal Years 1987-1991*, released in February 1986. The traffic projections were obtained using econometric equations that estimated traffic as a function of gross national product, the share of national economic activity in the Conrail service region, and the relative price of rail and truck services. These projections were made for each of the 14 major classes of commodities hauled by Conrail.

Using this technique, and under the assumptions in the CBO macroeconomic forecast, Conrail's traffic is projected to rise steadily to 195 million tons in 1992 and 1993. Tonnage would then decline slightly in 1994 and 1995. This decline is related to changes in Conrail's commodity mix: manufactured products such as processed food, lumber, pulp and paper, transportation equipment, and stone, clay, and glass products would gradually decline over time; "bulk" commodity products such as grain, coal, ores, and scrap materials would increase, more than offsetting the decline in manufactured goods until late in the forecast period.

A "low" macroeconomic case, which includes a severe recession in 1987 and 1988, was also constructed to test Conrail's resilience to a prolonged downturn. In this low case, the recession would reduce the number of tons hauled to a level that is 20 million tons below the base case by 1988. Traffic would recover partially in 1989 and grow only slightly

thereafter to a level of 180 tons in 1995, roughly equal to 1985 traffic. Thus, a severe recession would preclude any growth in Conrail's predicted traffic, but would not cause a serious decline in its level of service.

Net Operating Income

Net operating income is the difference between income derived from transportation services and the cost of providing them. In 1985, Conrail had net operating income of $388 million. Under CBO's base-case assumptions, this figure would rise to $493 million (in 1985 dollars, as are all figures in this Summary unless otherwise noted) in 1991, and then decline to $432 million by 1995. Under the low macroeconomic case, operating income would decline to $276 million in 1988 because of the effects of recession, and then would rise to $396 million by 1995.

Conrail's net operating income depends not only on the macroeconomic environment but on its own performance and the condition of the railroad industry in general. These last two factors are represented by assumptions regarding Conrail's **tariff recovery rate** and its **rate of productivity growth**.

The **tariff recovery rate** is the proportion of cost inflation that Conrail is able to pass forward to its customers. Conrail is assumed to be a competitive price-taker on a systemwide basis--that is, it is too constrained by competition to raise its prices for reasons other than higher costs (which, presumably, affect other railroads and modes of transportation as well). A tariff recovery rate of 0.8, for example, means that 80 percent of cost increases are passed through to rates. This same rate is used in Conrail's internal forecasts, and it is very close to the average value of this measure (0.82) over the 1980-1984 period. In this analysis, a base-case estimate of 0.7 is used for the tariff recovery rate.

A second important assumption is the **rate at which Conrail improves its productivity**. In the past three years, Conrail's productivity has improved by 9.0 percent, 5.4 percent, and 4.5 percent, respectively, and Conrail projects improvements of 3.5 percent for 1986 and between 2.0 percent and 3.0 percent thereafter. While such improvements are possible and consistent with historical experience, this study employed a more conservative assumption of annual productivity gains of 1.5 percent over the forecast period.

If a recession occurs and Conrail loses traffic, the railroad will probably moderate increases in its rates to retain its market share and also attempt to reduce labor and input costs in an effort to improve productivity.

High tariff recovery rates would tend to obviate the need for greater efficiency and, therefore, are probably accompanied by lower rates of productivity improvement. Therefore, in the low macroeconomic case, a lower tariff recovery rate (0.5) and a higher productivity improvement rate (2.0 percent) were assumed.

Capital Investment

In the base case, Conrail's investment in its system is projected to rise steadily over the forecast period. While real spending is projected to decline initially from 1985 to 1986 ($574 million and $484 million, respectively) according to Conrail's planned investment program, steady increases are then projected for the rest of the decade, bringing real investment to $633 million by 1995. In the low case, investment levels are lower, since the levels of both traffic and inflation are lower. Real investment rises nonetheless to $546 million by 1995.

This level of investment would be sufficient to maintain the scope and quality of the Conrail system. In order for Conrail to be viable while undertaking these investments, however, it would need enough cash to meet all of its current obligations--its operating costs, these investments, and interest and dividend payments.

Cash Flow

Conrail, in both the base and low cases, would have sufficient cash to meet all of its obligations over the 10-year forecast period. Conrail would add to its cash balance each year until 1988, when it must begin making interest and dividend payments to the federal government. These payments, which in current dollars vary between $265 million and $334 million annually under the base case (and between $171 million and $256 million under the low case), are large given the size of Conrail as an enterprise. Over the 10-year period, total payments to the government in current dollars are forecasted as $2.5 billion, of which $1.9 billion would come from income earned during that time. According to these projections, and under the conservative operating assumptions used in this report, Conrail would run out of cash in 1997 or 1998 in both cases, forcing a reduction in its dividend payment at that time. Nonetheless, Conrail appears to be able to meet all of its commitments over the next decade.

The choice of operating assumptions is very important in estimating Conrail's cash flow. The cash flow described above was calculated using

conservative assumptions about Conrail's operating environment. If the operating environment for Conrail proves to be more pessimistic than is characterized in the base case, Conrail's cash on hand could turn negative in 1993. But it is unlikely that this would actually occur. If Conrail were to observe dramatic declines in its profitability and cash on hand, then it probably would curtail its operations, eliminating unprofitable traffic to restore its viability.

On the other hand, if more optimistic assumptions are made regarding Conrail's operating environment (specificially, if the assumptions used in Conrail's own projections are employed), then Conrail's cumulative payments to the government would rise in current dollars from $2.5 billion under the base case to $3.3 billion (and from $1.8 billion to $2.5 billion under the low case), and the company's cash balances would increase steadily over the 10-year period in both cases.

IMPLICATIONS FOR POLICY

Four general options are available to the Congress for selling the federal government's interest in Conrail:

- A private, negotiated sale to a single purchaser, like the Department of Transportation's previous proposal to sell to the Norfolk Southern;
- A private, negotiated sale to an investor group for eventual resale to the general public, like the proposals by Morgan Stanley & Co., Inc., and by Allen & Co. and First Boston Corp.;
- A public sale through a direct stock offering; and
- Retention of the government's stock for sale at a later date.

The first option is predicated on the belief that Conrail's viability is in jeopardy and that the company requires the resources and expertise of a corporate parent such as the Norfolk Southern. Under this option, the government would accept the risk of receiving less than a "market" value for Conrail in exchange for an agreement with the corporate parent to preserve Conrail's service to its region. This analysis indicates, however, that the risk of Conrail's abandoning its service region is slight--projections show that Conrail's traffic will not decline and that it has the resources to maintain its system. Service could be reduced, however, if Conrail was

merged with the Norfolk Southern and railroad competition in the Midwest and Northeast decreased.

The second option is similar to the first in that the federal government would accept less uncertainty regarding Conrail's price in exchange for a price that could be less than its market value. In addition, stipulations regarding Conrail's service could be inserted into its conditions of sale. Again, given the apparent low risk of Conrail's proving unable to provide service to its region, this "resale" option has the sole advantage of reducing price uncertainty.

The third option, a public offering of Conrail stock, explicitly views Conrail , sound. Thus, it would have the government sell Conrail as an independent, "stand-alone" entity. In exchange for added price uncertainty, the government would stand a much better chance of realizing Conrail's full market value. The fourth option, deferring any sale, would permit Conrail to establish a more detailed picture of its operating potential. There is no certainty that a deferred sale would increase the price offered for the Conrail system. In fact, such an option could lower the price received for Conrail if a recession materialized and lowered Conrail's profitability.

WHAT IS CONRAIL WORTH?

A final question concerns the value of the government's interest in Conrail. This question cannot be answered with precision, however, because many uncertainties exist regarding the value of any asset, let alone one as large as the Conrail system. The two techniques used here to value Conrail yield similar but wide ranges. However, significant uncertainty would surround comparable estimates for any private concern.

One approach to ascertaining Conrail's value is to estimate the present value of the stream of dividends that Conrail will pay in the future. This present value should be equal to the value of Conrail's stock, since owning the stock entitles one to the dividend payments. Theoretically, these dividend payments should be calculated for a very long time horizon, well into the next century. Because estimating so distant an outcome is not feasible, CBO instead used the discounted stream of dividend payments for the forecast period plus the estimated value of the company at the end of the period.

CBO constructed three cases for the purpose of estimating the total value of Conrail: a low-profitability case, the base case used throughout this analysis, and a high-profitability case. The present value of the stream of dividend payments to the federal government over the next 10 years under these three cases, assuming that Conrail exists as a stand-alone corporation, would be $147 million, $810 million, and $1.7 billion, respectively. To this sum must be added the present value of the firm as it will exist in 1996, after the 10 years of dividend payments. This "salvage value" is very speculative, but can be approximated in all three cases by forecasting the value of all of Conrail's assets and subtracting from them all liabilities except stockholders' equity. Using this procedure, the present value of the firm 10 years from now would be $1.0 billion, $2.8 billion, and $3.9 billion under the three profitability cases. Thus, the expected value of Conrail today would be roughly $3.6 billion in the base case, but could range from $1.1 billion to $5.6 billion using this technique.

A second way to value Conrail is to use the "price-earnings" ratios of comparable firms' common stock. This ratio is the ratio of the value of the firm's stock to its profits. A very high ratio suggests that investors are optimistic about a firm's future, and vice versa. Railroad stocks, over the past 10 years, have had an average price-earnings ratio of between 6 and 12, with values at the high end of the range in the past year. Applying this range of ratios to the average level of Conrail's real earnings under the three profitability cases suggests a price range for the government's common stock of between $1.4 billion and $5.6 billion. Using a value of 9--the middle of the range of price-earnings ratios--and the base-case estimates of Conrail's profitability, the government's interest in Conrail would be worth $3.2 billion on the open market today.

CHAPTER I

INTRODUCTION

In 1983, the Department of Transportation (DOT) first solicited proposals for the sale of the Consolidated Rail Corporation (Conrail). In February 1985, DOT announced its intention to sell Conrail to the Norfolk Southern Corporation, but this offer was withdrawn in 1986. Several alternative proposals to sell Conrail have also been put forward. At the heart of the relative merits of these proposals lies the issue of Conrail's viability--that is, its long-term profitability--as a private company. This paper examines Conrail's future and its implications for the terms on which Conrail will be sold.

BACKGROUND

The Consolidated Rail Corporation began operations on April 1, 1976, as a private, for-profit railroad company. Formed from the remnants of seven bankrupt rail carriers in the Northeast and Midwest, Conrail was created to maintain essential transportation services in the industrial heartland of the country. Though established as a private concern, Conrail received government financing from its inception. These funds were used to compensate the estates of the bankrupt carriers, to rebuild the track and equipment transferred to it, and to cover operating losses during the rebuilding period (see Table 1). As compensation for its investment, the federal government acquired nearly complete ownership of the corporation.

Although the major programs to rebuild track were essentially completed by 1980, Conrail continued to produce operating losses and require federal subsidies. The possibility that Conrail might remain a continual drain on federal resources led the Congress to enact the Northeast Rail Service Act of 1981 (NERSA). The act provided Conrail with the opportunity to make the operating changes necessary for it to become a profitable railroad. The company responded with its first operating profit in 1981. Since that time, Conrail has become increasingly more profitable, with total net income for the 1981-1985 period of nearly $1.5 billion.

While NERSA provided Conrail with the opportunity to become a profitable railroad, it also directed the Department of Transportation to

examine ways of returning Conrail to private ownership. The act required DOT to initiate a sale of Conrail as a corporate entity if it became profitable. The department solicited proposals for the purchase of the government's interest in Conrail in 1983, and selected a proposal by the Norfolk Southern Corporation to purchase Conrail in a private sale. Although DOT considered a public stock sale of the company, the department cited its concern with ensuring continued service in the Conrail region and its doubt that Conrail could remain viable as an independent railroad company as reasons for selling Conrail to an established railroad with strong financial resources.

In reviewing the Department of Transportation's proposal, the Congress has expressed doubts over DOT's appraisal of Conrail's viability. This study addresses that issue, examining Conrail's projected traffic, net income, capital program, and cash flow and the implications of these measures for Conrail's viability. The study then examines policy options available to the Congress in returning Conrail to the private sector.

TABLE 1. FEDERAL INVESTMENT IN CONRAIL, CALENDAR YEARS 1973-1983
(In millions of dollars)

Investment Period	Type of Investment	Federal Investment	
		Current Dollars	1985 Dollars
1973-1976	Preconsolidation loans and grants	496	934
1976-1981	Purchase of securities	3,280	4,919
1976-1985	Local rail service assistance	208	322
1976-1985	Labor protection payments	552	718
1981-1985	Settlements with estates of bankrupt railroads	2,777	3,252
1982-1983	Transfer of commuter service under NERSA	125	135
	Total	7,438	10,280

SOURCE: Congressional Budget Office.

LEGISLATIVE AND FINANCIAL HISTORY OF CONRAIL

The history of Conrail and its bankrupt predecessors is a history of the problems that have confronted the railroad industry in the past 40 years: rising competition from trucks and barges, restrictive regulation by federal and state authorities, and declining profits and disinvestment in railroad

CONRAIL LEGISLATION, 1974–1985

1974 **Regional Rail Reorganization Act of 1973 (3R Act)** provides for the establishment of the Consolidated Rail Corporation (Conrail) as a for-profit freight railroad and the United States Railroad Association (USRA) as a government corporation to fund and oversee Conrail's operations.

1976 **Railroad Revitalization and Regulatory Reform Act of 1976 (4R Act)** enables Conrail to begin operations and initiates reductions in federal rail regulation.

1980 **Staggers Rail Act of 1980** enacts reforms that reduce Interstate Commerce Commission control and regulation over the railroad industry, and provides railroads with greater flexibility in pricing and provision of service.

1981 **Northeast Rail Service Act of 1981 (NERSA)** provides criteria for returning Conrail to the private sector as a profitable and viable entity; exempts Conrail from state taxes; provides for the transfer of Conrail's commuter service to local authorities; requires labor concessions; and permits expedited abandonment of unprofitable lines.

1983 Conrail transfers commuter passenger service as authorized by **NERSA**.

USRA reports that Conrail meets **NERSA** profitability tests.

1985 Conrail restores, retroactive to July 1984, industry-level wages that were reduced for three years in wage negotiations mandated by **NERSA**.

Department of Transportation selects Norfolk Southern Corporation as the preferred purchaser of government interest in Conrail.

operations. The increase in competition from the trucking industry in the period since World War II has had a particularly strong effect on the railroad industry. Highly valued, time-sensitive, and short-haul commodities have been lost to truck competition as the Interstate System has extended its reach, trucking costs have declined, and the quality of truck service has improved.

Over this same period, the railroads' attempts to compete with trucks and barges have been strongly hampered by pervasive and unresponsive economic regulation of the railroad industry. The statutes and administrative rules concerning rates, service, and operations severely restricted the ability of railroads to react to market conditions. Services and prices could not be altered rapidly, and innovations could not be made as markets dictated. The result was a steady loss of market share to competing modes of transportation.

The ability of railroads to leave markets that were no longer profitable also was limited by administrative regulations and delays that forced railroads to maintain unprofitable services for both freight and passenger operations. The resulting pressure on profits led to disinvestment in railroad operations. Investments in track structures were deferred as operating revenues declined. Equipment was permitted to deteriorate, and new equipment purchases were forgone. As a result, the overall quality of rail service deteriorated, and even more traffic was lost to better and more timely service provided by competitors.

While railroads nationwide felt the effects of these problems, railroads in the East and Midwest were particularly affected. Two major railroads in the Midwest and West--the Chicago, Rock Island, & Pacific, and the Chicago, Milwaukee, St. Paul, & Pacific--eventually entered bankruptcy. The railroad predecessors to Conrail--Ann Arbor Railroad, Central Railroad of New Jersey, Erie Lackawanna Railway, Lehigh & Hudson River Railway, Lehigh Valley Railroad, Penn Central Transportation Company, and Reading Company--were all in bankruptcy proceedings by 1973. The bankruptcy of the Penn Central, and the company's inability to emerge from bankruptcy as a reorganized railroad, was pivotal in the collapse of the other rail systems and the threat their collective loss posed to the region. These railroads carried nearly half of all rail traffic in the regions they served, and their bankruptcies threatened the economic health of the Northeast and Midwest.

The Congress responded by enacting the Regional Rail Reorganization Act of 1973 (3R Act). The stated purpose of the 3R Act was to identify a rail system that would provide adequate and efficient rail service in the Northeast and Midwest and to reorganize the railroads in the region into an

economically viable system that could provide that service. This act established the United States Railway Association (USRA) as a government corporation whose purpose was to design the system required to meet this goal and to prepare a final system plan incorporating that design. The act also established the Consolidated Rail Corporation as the company that would form this system through the receipt of properties transferred from the bankrupt railroads.

The final plan recommended by the USRA was implemented by the Congress in Title VI of the Rail Revitalization and Regulatory Reform Act of 1976 (4R Act). This title amended the 3R Act to conform its provisions to the final structural, operational, and financial system designed for Conrail. The 4R Act also initiated the first significant reduction in federal regulation of railroads since the enactment of the Interstate Commerce Act in 1887. Because regulatory restrictions had contributed to the bankruptcy of Conrail's predecessors, the Congress began the process of regulatory reform in the 4R Act to prevent additional bankruptcies in the industry, and to improve the opportunities for all railroads, including Conrail, to survive as private companies.

Conrail began operations on April 1, 1976, with over 99,000 employees and a 17,000-mile route system serving 16 states. Extensive rehabilitation of track and equipment was required to remedy years of neglect. Federal investment through the purchase of debentures and preferred stock issued by Conrail financed this rebuilding program. Federal funds also were provided to subsidize operating losses incurred over the rebuilding period. The final system plan projected the completion of the rebuilding program and the attainment of profitability by 1980.

Lower traffic and higher operating losses than projected, however, persisted through 1980. Federal investment in Conrail--the purchase of its securities to finance track rehabilitation and subsidize operating losses--grew commensurately (see Table 2). At the same time, the railroad regulatory reforms enacted in the 4R Act were proving to be insufficient to improve the financial health of the railroad industry in general. Conrail was doing worse than expected, as was the entire industry. To attack these problems, the Congress enacted two laws: the Staggers Rail Act of 1980 (Staggers Act) and the Northeast Rail Service Act of 1981 (NERSA).

The Staggers Act significantly reduced the government's regulation of pricing and marketing activities for all railroads. Changes made by the act enabled railroads to restructure rates and services to improve their profits and, if losses could not be avoided, to abandon more easily their unprofitable routes and services. Conrail has made extensive use of the Staggers Act to

TABLE 2. CONRAIL'S INCOME COMPARED WITH FEDERAL FINANCING, CALENDAR YEARS 1976-1985
(In millions of current dollars)

	1976 [a]	1977	1978	1979	1980	1981	1982	1983	1984	1985
Net Operating Income [b]	-173	-361	-386	-178	-187	66	49	288	466	397
Net Income [b]	-246	-412	-430	-221	-244	39	174	313	500	442
Federal Financing [c]	484	668	774	729	490	135	0	0	0	0

SOURCE: Compiled by the Congressional Budget Office using data from Conrail.

a. Nine months, April-December.

b. Income figures are for consolidated results of Conrail, including subsidiaries.

c. Federal financing includes only the purchase of securities to cover operating losses and track rehabilitation.

price and market aggressively its transportation services. An important part of the improvement in Conrail's financial condition since 1980 stems directly from the Staggers Act and its reduction of the federal economic regulation of railroads.

Conrail's continuing drain on federal resources led the Congress to enact the Northeast Rail Service Act of 1981, the other key element in the improvement in Conrail's performance. The act required Conrail to show by 1983 that it could be a profitable private railroad. If Conrail failed to satisfy the profitability tests mandated by NERSA, the Department of Transportation would be required to begin negotiating the transfer of Conrail's rail properties and freight service responsibilities piecemeal to other carriers.

The Northeast Rail Service Act of 1981 also permitted Conrail to make important changes in its operations by eliminating its obligation to provide commuter passenger service; expediting abandonment of unprofitable lines; terminating the lifetime job protection benefits in the 3R Act; completing the restructuring of its labor agreements; and obtaining wage concessions from its employees. These actions combined to reduce Conrail's operating costs markedly and improve the productivity of its workforce. The resulting effect on Conrail's net income can be seen in Table 2.

The restructuring of Conrail's operations as a result of the Staggers Act and NERSA steadily moved Conrail to an emphasis on the profitability of its services and the discontinuance of those services on which losses were being incurred. Conrail's current emphasis is one of maintaining and increasing the services it provides in the region only so long as it can provide them more efficiently than its competitors. The result has been a steady improvement in its financial condition and a strong ability to respond to changes in the demand for its services.

SALE OF THE GOVERNMENT'S COMMON STOCK INTEREST IN CONRAIL

The Northeast Rail Service Act of 1981 required the U.S. Railway Association to determine in two test periods--ending June 1 and November 1, 1983--whether Conrail would be a profitable railroad. The USRA found that Conrail was a profitable carrier and, under the provisions of NERSA, the Department of Transportation was required to initiate the return of Conrail to the private sector as a single entity through the sale of the government's common stock interest in the company.

According to the criteria established by NERSA, the plan devised for the sale of the government's stock had to ensure continued rail service, promote competitive bidding for the stock, and maximize the return to the federal government on its investment. Beyond these broad guidelines, the nature of the proposed plan for the transfer of Conrail was left to DOT. The plan prepared by DOT proposed a private sale of the government's stock through an agreement negotiated with the Norfolk Southern Corporation, a railroad holding company that controls the Norfolk and Western Railway and the Southern Railway. Norfolk Southern's proposal for a private sale was selected from among 15 proposals received by DOT in response to its sale solicitation.

The agreement with Norfolk Southern contained numerous covenants designed both to ensure continued service in the Conrail region for the five years after the sale and to determine the purchase price and the recapitalization of Conrail before the sale. These covenants include stipulations on the required level of investment in Conrail, restrictions on financial transactions and requirements for financial reports, specification of tax treatments of the transactions involved in the stock sale, divestiture requirements for ameliorating anticompetitive effects of the merger, and provisions requiring the settlement of outstanding labor claims.

The Department of Transportation viewed these covenants and the sale to the Norfolk Southern Corporation as essential to preserving the services provided by the Conrail system. The department believed that the long-term viability of Conrail was in doubt and that, consequently, a sale agreement with operational covenants could best assure service in the short run and that a purchaser with strong internal financial resources was required to provide the capital it would need in the long run. Furthermore, DOT suggested that Norfolk Southern's railroad experience and commitment to the industry would provide the expertise and support necessary for Conrail during unstable economic conditions.

Alternative proposals by two groups--one led by Morgan Stanley & Co., Inc., and the other by Allen & Co. and First Boston Corp.--were for negotiated sales of the government's stock to the respective investment groups with eventual resale of the stock to the public. These proposals differed from the Norfolk Southern offer in both their sale price and other terms, and in that each of these proposals for public sale would maintain Conrail as an independent railroad. By remaining independent, Conrail would not have the internal corporate financing available that it might have as the subsidiary of a larger corporation. An independent Conrail, however, would avoid the potential adverse effects on competition from a merger with Norfolk Southern, and would avoid conveying tax advantages to a parent corporation.

VIABILITY OF CONRAIL

A principal point of contention between the competing Conrail sale proposals is whether or not Conrail can remain viable as an independent railroad company. In its original sale plan, the Department of Transportation asserted that Conrail could not remain viable over the long term and, consequently, that service in the region could best be preserved by merging Conrail into the Norfolk Southern system of strong rail carriers. The department contended that the loss of competition that might result from the merger could be partially offset by divestiture of properties to potential competitors in the region. In addition, if DOT's view of Conrail's long-term viability was correct, competition would be adversely affected in any case, because Conrail's loss of traffic and worsening financial condition would reduce its ability to compete in the region.

The proponents of maintaining Conrail as an independent company contend that Conrail can remain viable over the long term. In their view, an independent Conrail would produce sufficient income to meet its operational and financial commitments without needing the cash infusions or temporary financing of a corporate parent and without being forced to seek government subsidies in the future.

Determining whether Conrail would be viable over the long term depends in part on how viability is measured and over what period it is estimated. This study uses four criteria for assessing viability:

- Absent extensive economic dislocations in the region it serves, Conrail should be able to maintain its traffic base within the range of its recent experience.
- Net operating income should remain positive and at a level consistent with the size of the railroad and the traffic it carries.
- Capital investment should be sufficient to maintain the quality of the track and equipment at current levels.
- Net income and cash flow from operations should be sufficient to meet the company's capital, debt, and dividend requirements.

The four criteria roughly correspond to sections of a corporation's financial statement. The first criterion concerns the quantity of services the Conrail corporation will provide. The second involves whether those services are profitable, and corresponds to operating income on a corporate statement.

The third criterion involves the firm's capital investment program and the capital charges arising from it. Finally, the fourth criterion brings together the financial activities and commitments of the firm and investigates whether all of these can be satisfied simultaneously.

This paper, in fact, follows the organization of a corporate financial statement (see Figure 1). In Chapters II through V, the Congressional Budget Office (CBO) has projected Conrail's traffic, net operating income, capital program, and cash flow. Each of these chapters begins with a brief summary of the projections and their implications for Conrail's viability. The study covers the period from 1986 through 1995. This 10-year period is sufficient to gauge the potential of the firm while keeping the projections within a reasonable forecast range.

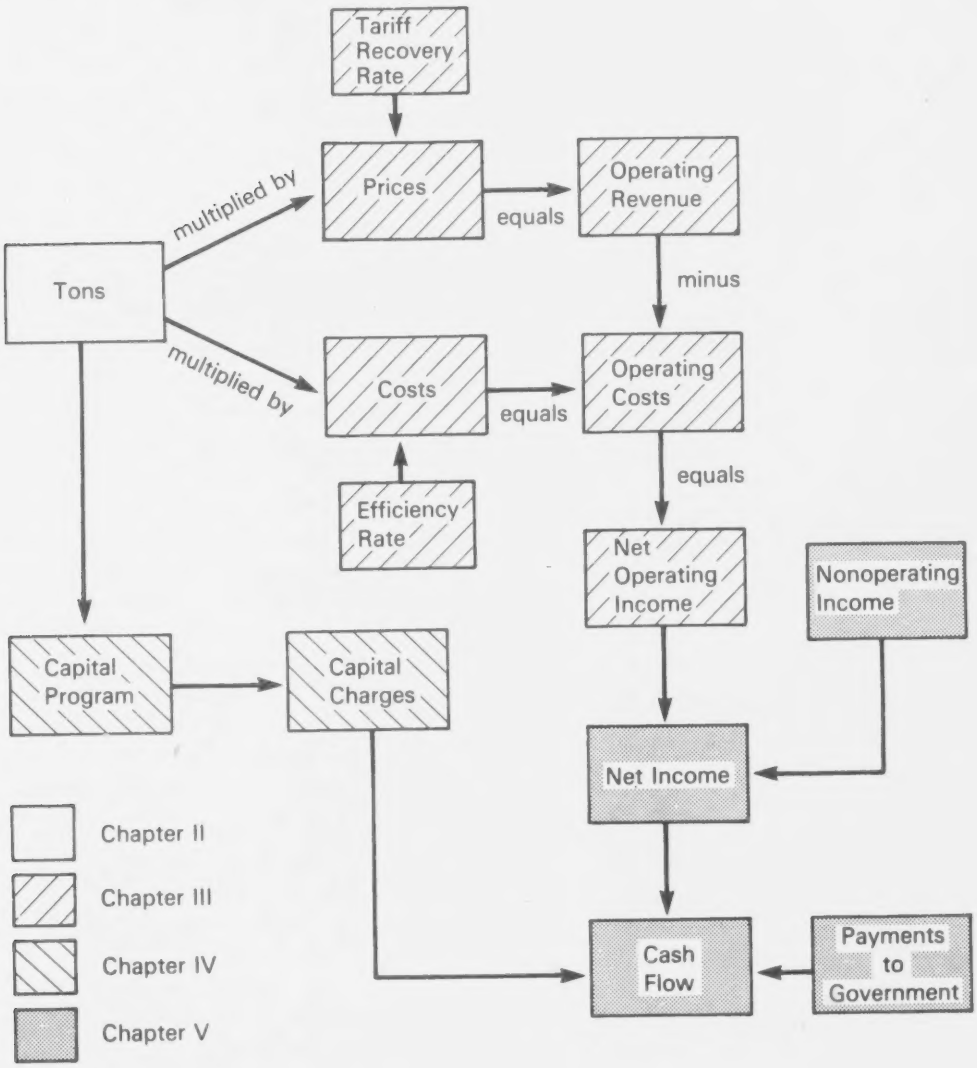
METHODOLOGY

The analytic method used by CBO to forecast Conrail's future viability consists of four parts: projections of Conrail's traffic, net operating income, capital investment, and cash flow. Underlying the analysis in all four parts are basic assumptions concerning the legal status of the corporation and the macroeconomic environment of the study period.

Baseline Scenario. The assumption concerning Conrail's legal status is that there is no change in current law and that Conrail's financial and operational structures remain essentially as they were at the end of 1985. This baseline scenario has the following implications:

- The federal government retains ownership of all of Conrail's outstanding debentures.
- The government holds all of Conrail's Series A and Series B preferred stock.
- The government holds 85 percent of the common stock of the corporation.
- Conrail retains the use of its net operating loss carryforwards.
- Conrail retains the use of its investment tax credits.
- Conrail is exempt from paying state taxes.

Figure 1.
Organization of the Analysis



SOURCE: Congressional Budget Office.

- Conrail's labor protection payments are the responsibility of the federal government.

- The 1979 financing agreement between Conrail and the USRA remains in force.

Baseline Forecast. The assumptions made concerning the future level of macroeconomic activity are the same as the baseline forecast in CBO's *The Economic and Budget Outlook: Fiscal Years 1987-1991* released in February 1986. This baseline forecast is called the base case in this study. All of the forecasts and projections of Conrail's traffic and finances are predicated on and consistent with this base-case forecast. In order to observe the sensitivity of the Conrail projections to the macroeconomic assumptions used in the base case, a "low case" incorporating a recession in 1987 and 1988 is also examined.

The relevant macroeconomic variables for each case are real gross national product (real GNP), the GNP deflator, and the interest rate on three-month Treasury bills (see Table 3). The CBO baseline and low forecasts are made only through 1991 and must be extended through the 1992-1995 period for this study. In both cases, real GNP and the GNP deflator are increased over this period at annual rates equal to those projected from the fourth quarter of 1990 to the fourth quarter of 1991. The T-bill rate for the 1992-1995 period in each case is the rate projected for 1991.

In the base case, sustained real growth in output is accompanied by moderate inflation for the forecast period. Real GNP grows at an average annual rate of 3.3 percent through 1991 and then declines slightly to the assumed annual rate of increase in the economy's growth potential, or 2.7 percent, for the remainder of the period. The inflation rate, as measured by the GNP deflator, is 3.6 percent in 1986 and increases to 4.1 percent per year thereafter. The rate on T-bills declines slowly from 6.8 percent in 1986 to 5.4 percent in 1991.

In the low case, a recession is assumed to begin in 1987 and to extend through 1988. Real GNP drops by 0.7 percent in 1987 and by 0.8 percent in 1988. Real GNP growth recovers at a moderate rate after the recession and levels off at 3.2 percent for the 1991-1995 period. The GNP deflator increases slightly before the recession and then drops with the decline in output and the slack in the economy to 2.1 percent by 1991 and remains at that level. The rate on T-bills rises before the recession to a high of 7.7 percent in 1987 and then drops steadily to 4.3 percent by 1991.

TABLE 3. CBO MACROECONOMIC VARIABLES
(Base year 1982)

	Actual 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Base Case											
Real GNP (billions of 1982 dollars)	3,570.9	3,689.0	3,804.8	3,930.9	4,068.5	4,210.9	4,346.1	4,463.4	4,583.9	4,707.7	4,834.8
Percent Change	2.3	3.2	3.1	3.3	3.5	3.5	3.2	2.7	2.7	2.7	2.7
GNP Deflator	1.117	1.157	1.204	1.254	1.306	1.360	1.415	1.473	1.533	1.596	1.662
Percent Change	3.3	3.6	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Three-Month Treasury Bill Rate (percent)	7.5	6.8	6.7	6.4	6.1	5.7	5.4	5.4	5.4	5.4	5.4
Low Case											
Real GNP (billions of 1982 dollars)	3,570.9	3,679.4	3,654.4	3,624.7	3,821.1	3,950.6	4,078.2	4,208.8	4,343.4	4,482.4	4,625.9
Percent Change	2.3	3.0	-0.7	-0.8	5.4	3.4	3.2	3.2	3.2	3.2	3.2
GNP Deflator	1.117	1.159	1.211	1.246	1.283	1.311	1.339	1.367	1.396	1.425	1.455
Percent Change	3.3	3.7	4.5	2.9	3.0	2.2	2.1	2.1	2.1	2.1	2.1
Three-Month Treasury Bill Rate (percent)	7.5	7.6	7.7	5.9	5.6	4.9	4.3	4.3	4.3	4.3	4.3

SOURCE: Congressional Budget Office, *The Economic and Budget Outlook: Fiscal Years 1987-1991*, extended by CBO for the years 1992-1995 for this analysis.

These macroeconomic cases are not in any sense actual forecasts of future economic events. Rather, they are stylized paths that represent two ways in which the economy might grow. In the later years of the forecast period, growth is actually higher under the low case than under the base case. This anomaly occurs because, under the base case, the economy grows so consistently in the late 1980s that, by 1992, the economy is producing at a level equal to its productive potential, and further growth is limited by the rate at which productivity increases and the rate at which new resources--particularly growth of the labor force--are introduced into the economy. The average annual rate of growth under the base case, however, is 3.2 percent, compared with 2.6 percent under the low case, over the entire 10-year forecast period.

CHAPTER II

PROJECTING CONRAIL'S TRAFFIC

Chapter Summary. Conrail's potential for surviving as an independent railroad depends in part on the traffic it will carry since the actual tonnage hauled by Conrail will affect the company's revenues, net income, and cash flow. Using an econometric model, CBO forecast Conrail's traffic over the 10-year period 1986 through 1995. The model is designed to predict Conrail's annual tonnage for each of the 14 principal commodity groups the railroad carries. The forecast results, therefore, indicate both the total tonnage predicted for Conrail and the composition of that tonnage among the commodity groups. Under CBO's baseline macroeconomic forecast, Conrail's tonnage is predicted to rise steadily from 185 million tons in 1986 to 195 million tons in 1992, at which point it declines slightly to 192 million tons by 1995. These results are comparable to Conrail's recent traffic of 183 million tons in 1983, 192 million tons in 1984, and 181 million tons in 1985--indicating that Conrail will maintain its traffic base in future years.

Projecting Conrail's future viability requires first estimating the traffic it will carry. The transportation services supplied by Conrail are the principal determinants of its revenue, expenses, and capital requirements and, therefore, of its net income and cash flow--the key indicators of Conrail's viability. In 1985, Conrail hauled 181 million tons. Under CBO's baseline macroeconomic forecast, Conrail is projected to haul 194 million tons in 1990 and 192 million tons in 1995.

An econometric model is used to predict Conrail's traffic in the 10-year forecast period, 1986-1995. The model is based on assumptions concerning the demand for railroad transportation services in general and for Conrail's services in particular, and produces forecasts of Conrail's tons by commodity through 1995. This chapter presents the assumptions made in the traffic forecast, the model constructed to predict Conrail's traffic, and the results obtained.

ASSUMPTIONS

Two sets of assumptions were employed in projecting Conrail's traffic: those made to analyze historical traffic levels, and those needed to forecast future traffic based on that analysis. In the former category are the assumptions made to construct the individual equations in the model. The latter category includes the assumptions about the future level of macroeconomic activity that are used to forecast the model and were presented in Table 3.

In constructing the traffic model, the following general assumptions concerning railroad transportation and the demand for Conrail's services are made. The tonnage hauled by Conrail is assumed to depend on the level of output in the national economy, the level of economic activity in the Conrail region, and the degree of competition for the available traffic from other railroads or other modes of transportation. These assumptions determine the variables selected to explain Conrail's historical traffic levels.

The demand for the transportation services provided by Conrail can be characterized as a derived demand, since the transportation of raw materials, intermediate goods, and finished products is derived from the demand for those goods in the economy. As the level of real national output changes, the demand for transportation of that output will also change. Conrail's tonnage particularly depends on both the output of goods in the region it serves and the national level of economic activity. While Conrail and other railroads are competing (principally with trucks) to maintain and increase their share in the transportation of finished goods, the commodities carried by railroads are primarily inputs to or intermediate goods in the production process. Any shift in the production of output from its territory to other regions of the country, therefore, will reduce Conrail's traffic base.

Finally, competition from trucks and other railroads for the traffic available in the region will affect both Conrail's potential traffic and its rates. The ability of other modes to compete with Conrail depends on their relative cost of providing alternative transportation services: the lower the relative cost, the greater the competitive pressure on Conrail's traffic.

TRAFFIC MODEL

The traffic model is an econometric model designed to forecast the number of tons hauled by Conrail over the 1986-1995 period. The model is a system

of equations based on the 14 principal commodity groups carried by Conrail. Since each commodity group is characterized by its own market for transport services and the demand for transportation services is not uniform across these commodities, forecasts of the demand for Conrail's services and the tons hauled are made on a commodity-by-commodity basis. Each commodity group is analyzed in an individual equation, and the resulting 14 equations are summed to predict Conrail's total tonnage for each year in the forecast period.

The general form of the equation for each commodity group is similar, though each of the equations differs somewhat since the factors affecting tons hauled vary among commodities. The variables used to predict tonnage include output variables, regional production indices, relative cost indices, various seasonal and structural adjustment variables, and time trends.

The output variables are either industrial production indices or shipment indices for each commodity group. Since these output variables are commodity-specific, they reflect changes in overall economic activity as well as fluctuations in the output of Conrail's specific commodity groups. The growth rate of each output variable is scaled to the forecast growth rate of real GNP using proportions obtained from the Data Resources, Inc. (DRI) model. The resulting indices provide a measure of forecasted national output for each commodity group.

The regional production indices are designed to capture shifts in national production that affect the demand for transportation in the Conrail region. These indices are ratios of employment in the Conrail service region to employment nationwide in the industries producing the commodities Conrail carries. While the output variables indicate total demand in national transport markets, these ratios indicate the percentage of that demand arising in Conrail's markets. Estimates of the future values of these indices were taken from the DRI model.

The relative cost indices are measures of the cost competitiveness between rail transport and truck transport. These indices are ratios of rail rate indices, by commodity, to a truck cost index. Increases in these ratios indicate a rise in the price of rail transportation for a commodity relative to the cost of the trucking alternative.

Various dichotomous or "dummy" variables are used to reflect variations in the number of tons hauled resulting from seasonal factors and specific events such as coal strikes. Time trends measure the overall trends in Conrail's traffic that are not captured by variations in the other explanatory variables.

TABLE 4. PROJECTIONS OF TOTAL TONS HAULED BY CONRAIL, 1986-1995 (In millions of tons)

	Actual 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Base Case	181	185	188	190	191	194	194	195	195	193	192
Low Case	181	184	179	170	176	177	177	179	180	179	180

SOURCE: For 1985, Conrail; for 1986-1995, Congressional Budget Office.

The model is estimated using quarterly data from 1977 through 1984. The results obtained are used to forecast each equation for the 1986-1995 period. These forecasts are made using projections of the explanatory variables consistent with the macroeconomic forecast in both the base case and low case. The results are ton estimates by commodity for both cases.

FORECAST RESULTS

The forecast for Conrail's tonnage is one of steady but modest growth. Changes are predicted in both the mix of commodities and the total level of traffic. Conrail's total tonnage by year for the base case and low case is presented in Table 4 above. Tonnage by commodities is shown for both cases in Table 5. 1/

Total Tonnage

In the base case, sustained economic growth and moderate inflation combine to produce gains in traffic throughout most of the forecast period. The

1. A fifteenth commodity category, "Other," is not forecast by the model but is increased at the average rate of the 14 commodities in the base case and held constant at its 1985 level in the low case. The totals for each year are the sum of the forecast results for each equation plus the annual projections for "Other," and are shown in Table 4.

number of tons hauled each year grows steadily from 181 million tons in 1985 to 194 million tons by 1990. Tonnage remains at about 194 million to 195 million tons until 1994, when it begins a slight decline.

In the low case, the recession reduces traffic substantially. By the trough of the recession in 1988, traffic is 20 million tons below the base-case forecast. Traffic recovers partially in 1989, but grows only slightly thereafter. Total tons do not regain their 1986 prerecession level, but reach a plateau of between 179 million and 180 million tons per year in the 1992-1995 period, which is roughly equal to the 1985 level.

TABLE 5. PROJECTIONS OF TONS HAULED BY CONRAIL, BY COMMODITY, IN 1990 AND 1995 (In millions of tons)

Commodity	Actual	Base Case		Low Case	
	1985	1990	1995	1990	1995
Chemicals	16.4	18.5	19.4	16.8	18.0
Coal	59.7	66.1	68.5	63.1	66.2
Coke	4.0	3.9	4.2	3.6	4.0
Farm Products	8.2	10.5	11.5	10.5	11.5
Food Products	11.2	9.2	6.0	6.5	3.9
Lumber	4.0	3.2	2.4	2.7	1.9
Metallic Ores	6.3	7.0	7.3	5.8	6.3
Nonmetallic Minerals	9.1	7.9	6.5	6.7	5.6
Primary Metal Products	14.4	16.2	17.4	14.8	16.4
Pulp and Paper Products	10.9	9.9	8.0	8.8	7.1
Stone, Clay, and Glass Products	4.8	4.6	4.1	3.8	3.4
Trailer on Flat Car (TOFC)	11.4	13.5	15.1	12.8	14.5
Transportation Equipment	8.8	8.9	7.5	8.3	7.0
Waste and Scrap Materials	6.9	8.5	8.9	7.9	8.5
Other	5.3	5.5	5.6	5.3	5.3
Total	181.2	193.5	192.4	177.3	179.5

SOURCE: For 1985, Conrail; for 1990 and 1995, Congressional Budget Office.

NOTE: "Other" is not forecast by the model but is increased at the average rate of the 14 commodities in the base case and is held constant at its 1985 level in the low case.

Tonnage by Commodity

While the number of tons hauled grows steadily over most of the period in the base case, the mix of individual commodities varies. The change in the commodity mix over the period can be seen in Table 5, in which tons by commodity are shown at five-year intervals. Commodity groups that are primarily bulk goods--chemicals, coal, coke, farm products, metallic ores, primary metal products, trailer on flat car (TOFC), and waste and scrap materials--increase over the 10-year period and are a total of 25 million tons higher in 1995 than in 1985. Those groups that primarily include manufactured commodities--food products, lumber, nonmetallic minerals, pulp and paper, transportation equipment, and stone, clay, and glass products--decrease over the same period and are a total of 14.3 million tons below their 1985 level in 1995. In 1994 and 1995, the long-term downward trends in manufactured goods traffic begin to offset the modest but steady growth in Conrail's bulk commodity traffic and, as a result, total tons decline slightly in those years.

The same commodities that increase in the base case also increase in the low case. By 1995, this group of commodities is 18.1 million tons higher than in 1985. The group of declining commodities is 19.9 million tons below its 1985 level in 1995. The result is a slight decline in total tons by 1995 from the 1985 level. This decline reflects both the cyclical effect of the recession and the long-run trend that is apparent in the base case. In fact, three-fourths of the difference in 1995 between the low and base cases can be accounted for by an acceleration in the decline of manufactured goods traffic and a slowdown in the growth of coal, chemical, and TOFC traffic. The result is a total traffic level by the end of the forecast period that is 12 million tons less than in the base case and roughly equal to the level of traffic transported in 1985.

The results of the traffic model indicate that Conrail will carry levels of traffic commensurate with its recent experience and sufficient to use effectively its current and prospective capacity whether the baseline or low scenario occurs. The predictions of tons by commodity developed in this chapter provide the basis for projecting operating revenue, operating expenses, and net operating income in the next chapter. The financial data developed there and in Chapters IV and V are the principal measures of Conrail's potential for surviving as an independent transportation company.

CHAPTER III

PROJECTING CONRAIL'S NET OPERATING INCOME

Chapter Summary. The forecasts of Conrail's traffic from Chapter II provide the basis for estimating the net operating income Conrail will earn from carrying that traffic. By combining the tonnage forecast with assumptions about Conrail's ability to price its services, estimates of Conrail's operating revenue are obtained. Similarly, combining the tonnage forecast with assumptions about Conrail's costs and its rate of productivity growth produces estimates of Conrail's operating expenses. Operating revenues less operating expenses yields estimates of Conrail's net operating income--that is, income derived solely from the transportation operations of the company. Under CBO's baseline macroeconomic forecast and conservative assumptions for estimating operating revenues and expenses, Conrail's net operating income is projected to rise steadily from $418 million in 1986 to $640 million in 1992 and to remain at approximately this level through 1995. This amount compares with net operating income in the years 1983 through 1985 of $285 million, $450 million, and $388 million, respectively. The projected levels of net operating income indicate that Conrail will be able to maintain its traffic base, meet its operating expenses, and remain profitable over the next decade.

Net operating income is the difference between the revenue derived from transportation services and the expenses incurred in providing them. It does not incorporate such expenditures as taxes or capital improvements, but it nonetheless indicates the financial strength of Conrail. In this chapter, Conrail's revenue and expenses first are estimated separately and then are combined into a projection of net operating income.

Estimating Conrail's revenues and expenses for the forecast period is a more subjective process than forecasting its traffic. The principal factors affecting Conrail's potential traffic do not change dramatically over the historical and forecast periods. Factors affecting revenues and costs, however, have changed so significantly between 1976 and 1985 that they cannot be reliably forecast using an econometric model. Projections of operating revenues and expenses are therefore based on assumptions concerning Conrail's competition and costs over the 1986-1995 period.

OPERATING REVENUES

Estimates of operating revenue depend on the forecast of Conrail's tonnage by commodity from the traffic model, the revenue per ton by commodity received by Conrail in 1985, projected inflation over the forecast period, and assumptions concerning the competition and therefore the pricing constraints that Conrail will face in the future.

Revenue is calculated using the tonnage for each commodity, as estimated by the traffic model. In using this measure, CBO made several assumptions about the nature of the traffic hauled over the 10-year forecast period. First, the actual shipment mix of specific commodities is assumed to remain constant within the individual commodity groupings used in Chapter II. This assumption is necessary because of the lack of more detailed data on the commodities hauled by Conrail. Second, the average length-of-haul for shipments within each commodity group is assumed to be constant and, therefore, the relationship between tons and ton-miles is constant as well. This assumption is in accord with the recent stability in Conrail's overall average length-of-haul.

The prices, or rates, for each commodity are based on 1985 revenue by commodity. Revenue per ton by commodity is calculated from 1985 data and is used as a base on which to project rate increases resulting from inflation. Prices are raised at a rate equal to a uniform percentage of inflation. The measure of inflation used to calculate rate increases is CBO's forecast of the percentage change in the GNP deflator, presented in Table 3.

Conrail's ability to raise rates in response to inflation is determined largely by the degree of price and service competition provided by trucks, barges, and other railroads. The percentage of inflation-induced cost increases that can be recovered by raising rates is called the tariff recovery rate. This rate is a function of the assumptions made about Conrail's relative service quality and price levels. A tariff recovery rate of 0.8, for example, means that Conrail will raise its prices to recoup 80 percent of its cost inflation.

In this analysis, Conrail is viewed as a price-taker on a systemwide basis--that is, the prices it can charge are largely determined by the transportation markets. Theoretically, if Conrail were faced with more efficient and cost-cutting competitors, it could be forced to set a tariff recovery rate as low as zero. In such a case, real rates would decline to compete with the

efficient operations and services provided by those competitors. On the other hand, if Conrail were not faced with more efficient competitors that forced it to hold down its rates, Conrail could fully recover cost increases caused by inflation by setting its tariff recovery rate equal to one.

The choice of which tariff recovery rate to use in projecting Conrail's revenue depends on the level of expected competition in the Conrail service area, since competitive markets restrain Conrail's pricing. Over the 1980-1984 period, the average tariff recovery rate for the railroad industry was 82 percent (.82). In recent years, Conrail has forecast a tariff recovery rate equal to 80 percent of inflation (0.8) in years of economic growth and 50 percent of inflation (0.5) in recessions. The lower value in recessions reflects the belief that Conrail would attempt to moderate price increases during recession years in an effort to preserve its market share. In Conrail's most recent five-year outlook of June 1985, the tariff recovery rate was projected at 0.8 in each year.

The forecast of operating revenue used in this analysis is based on a tariff recovery rate of 70 percent in the base case and 50 percent in the low case. The assumption of a 0.7 tariff recovery rate suggests that competition will restrain Conrail's pricing over the forecast period more than it has in the recent past, but that the ability of efficient competitors to undercut Conrail's rates will not change dramatically. Although there is no immediate reason to believe that Conrail's competitive position will deteriorate in this fashion, a tariff recovery rate of 0.7 is employed simply to provide a conservative estimate of Conrail's ability to recoup cost increases resulting from inflation. The low case assumes greater real price-cutting and competition during and after the recession. This assumption also is conservative, given that the economy expands steadily after the 1987-1988 recession under the low case.

The level of projected operating revenue, then, depends on the level and mix of commodities hauled (derived from the traffic model), the rate of inflation (from the macroeconomic forecast), and the value chosen for the tariff recovery rate. The percentage increase in the tariff rate for all commodities is calculated by multiplying the tariff recovery rate by the inflation forecast for the year. Then, on a commodity-by-commodity basis, this percentage change is applied to the revenue per ton realized in the previous year, yielding the current year's revenue per ton. The tonnage forecast for each commodity group is then multiplied by its revenue per ton to produce revenue by commodity. Summing all revenues by commodity yields total operating revenue.

Various tariff recovery rates and the resulting levels of operating revenue in 1990 and 1995 are presented in Table 6 for both the base and low macroeconomic cases. With full recovery of inflation-related cost increases, revenues are over 50 percent higher in 1995 than 1985 in the base case, and almost 25 percent higher in the low case. Without any rate increases, the higher levels of operating revenue in the base case reflect solely the changes in the level and mix of commodities transported. In the low case, without any rate increases, operating revenue is below the 1985 level in both 1990 and 1995. This decline, while partly a result of lower traffic in each of those years, stems principally from changes in the composition of the goods hauled by Conrail. In the base case, the tariff recovery rate of 0.7 produces operating revenue of approximately $3.8 billion in 1990 and $4.3 billion in 1995. In the low case, using a tariff recovery rate of 0.5 produces operating revenue of approximately $3.3 billion in 1990 and $3.5 billion in 1995.

TABLE 6. PROJECTIONS OF OPERATING REVENUE UNDER ALTERNATIVE TARIFF RECOVERY RATE ASSUMPTIONS
(In millions of current dollars)

Tariff Recovery Rate	Actual	Base Case		Low Case	
	1985	1990	1995	1990	1995
0.0	3,162	3,347	3,259	3,054	3,024
0.2	3,162	3,483	3,533	3,155	3,190
0.3	3,162	3,553	3,677	3,206	3,276
0.5	3,162	3,696	3,983	**3,311**	**3,454**
0.7	3,162	**3,843**	**4,311**	3,418	3,641
0.8	3,162	3,919	4,484	3,473	3,738
1.0	3,162	4,073	4,848	3,585	3,938

SOURCE: For 1985, Conrail; for 1990 and 1995, Congressional Budget Office.

NOTE: Does not include subsidiaries.

OPERATING EXPENSES

Operating expenses consist of four major cost categories:

- **Maintenance of way and structures** entails the routine maintenance of the physical plant including track, buildings, bridges, and communications and signaling equipment.

- **Equipment maintenance and rents** include mechanical maintenance and heavy repair programs for locomotives and freight cars, car inspection and repairs in support of train operations, and net mileage and time charges for renting freight cars and locomotives.

- **Transportation expenses** include both the direct costs of operating trains and yards and the costs of support activities such as train dispatchers, supervisors, utilities, and supplies.

- **General and administrative costs** cover the expenses incurred from nonoperating functions such as salaries for management and support personnel, computer rents, legal fees, consultants, and pensions.

Conrail's operating expenses are estimated for each of these categories over the forecast period.

Since the nature of Conrail's costs has changed continuously and significantly over the historical period, estimating future expenses based on an analysis of historical relationships could be misleading. The rehabilitation of the system and equipment conducted during Conrail's early years, and the unreliability of equipment over that same period, raised unit costs in the 1970s. Passage of the Staggers Act in 1980 and NERSA in 1981 led to more efficient routing of traffic, the elimination of many uneconomic branch lines, the elimination of Conrail's responsibility for costly commuter services, the end to lifetime job protection for employees, the restructuring of Conrail's labor agreements, and a temporary reduction in labor costs. In effect, the physical rebuilding and restructuring of the railroad in the 1970s was followed by the restructuring and coordination of systemwide operations between 1980 and 1983. Because of these changes and their effects on future costs, an econometric analysis and forecast of Conrail's operating expenses was not used. Instead, Conrail's costs are projected based on its recent cost experience and on assumptions concerning future inflation rates and improvements in productivity.

Conrail's operating expenses vary with the number of tons hauled and with changes in both the quantities used and the prices of the components (such as labor, fuel, and materials) of each of the four expense categories. Only a portion of these expenses varies with output, however, and CBO's estimates of these percentages are shown below:

Category of Costs	Percentage that Varies with Output
Maintenance of Way and Structures	50
Equipment Maintenance and Rents	50
Transportation Expenses	70
General, Administrative, and Other	10

These percentages yield a systemwide average percentage of variable costs of approximately 55 percent. These percentages are important, since overstating the portion of costs that is variable would suggest that Conrail's expenses react more to changes in its output than in fact they do. Consequently, any under- or overstatement of variable costs would tend to make Conrail's profitability appear to depend either too heavily or too little, respectively, on the level of real GNP.

Changes in the price of Conrail's inputs such as labor or fuel are presumed to equal forecasted changes in the GNP deflator. Changes in the quantities of inputs used in the provision of transportation services are accounted for by projections of operating efficiencies. These efficiencies, or improvements in productivity, lead to reductions in the unit costs. The rate at which improvements in efficiency or increases in productivity occur depends on management goals and planning, including both technological and operational innovations. Therefore, to a large extent, the level of efficiencies assumed depends on the assumption made concerning Conrail's opportunities to economize on the use of inputs and on management's and labor's ability and willingness to exploit those opportunities.

In the years 1983 to 1985, Conrail's increases in productivity were 9.0 percent, 5.4 percent, and 4.5 percent, respectively. Conrail forecasts a 3.5 percent improvement in productivity in 1986 and has in recent years set as a management goal efficiencies of 2.0 percent to 3.0 percent a year. This study assumes a 1.5 percent rate of annual productivity increases in the base case and a 2.0 percent annual rate in the low case. A 1.5 percent rate

was chosen as a conservative estimate of Conrail's potential for increases in productivity in the forecast period given recent experience and Conrail's stated efficiency goals of 2.0 percent per year over the next four years. The higher efficiency level projected for the low case is based on the expectation that as traffic levels and revenue are reduced during the recession and afterward, the pressure on Conrail to economize on all aspects of operations would be greater and that the stated goal of efficiencies of 2.0 percent would be met in each forecast year.

Factors used to estimate operating expenses are the tonnage forecast from the traffic model, the rate of inflation from the macroeconomic forecast, and the level of expected efficiencies. The actual operating expenses incurred in 1985 serve as a base on which operating expenses are calculated in the forecast period. Operating expenses for 1985 reflect the first full year in which Conrail's operational and physical plant restructuring are essentially complete and its wage rates are restored to industrywide levels. 1/

To calculate operating costs in each expense category, the previous year's expenses are divided between their fixed and variable portions. The fixed portion of expenses is increased by the amount of inflation for the current year to account for changes in the price of inputs, and is then decreased by the rate of productivity growth for the year to account for efficiencies in the production process. The variable portion is calculated in the same way, except that the final amount is then multiplied by the ratio of the current year's tons to the previous years tons to account for changes in output levels. The sum of the two portions gives the current year's expense for each category. Summing expenses for the four categories yields total operating expense for the year.

Various annual efficiency rates and the resulting levels of operating expenses for the base case and low case are shown in Table 7. When the rate of productivity growth is zero, operating expenses in 1995 reflect the effects of increased tonnage and the full effects of inflation. As a result, real operating expense per ton is the same as it was in 1985. At the other extreme, as annual efficiencies rise above 4 percent, nominal operating expenses per ton in 1995 decline to below the 1985 level. The effects in the low case are similar except that operating expenses are lower because of the reduced traffic and inflation forecasts in this case. In addition, since the level of tons in 1995 is almost the same as that in 1985 under the low case, operating expenses in 1995 directly reflect the amelioration achieved by

1. Labor and management employees accepted three years of wage reductions from July 1981 to June 1984 in accordance with the provisions of NERSA.

efficiencies in the cost increases resulting from inflation. In the base case, using an efficiency rate of 1.5 percent produces operating expenses of approximately $3.2 billion in 1990 and $3.7 billion in 1995. In the low case, an efficiency rate of 2.0 percent produces operating expenses of approximately $2.9 billion in both 1990 and 1995.

NET OPERATING INCOME

Conrail's net operating income--the difference between operating revenues and operating expenses--depends on the combination of assumptions made concerning Conrail's tariff recovery rate and its rate of operating efficiencies. Lower tariff recovery rates, for example, would probably be accompanied by higher efficiencies; that is, if competitive pressure pro-

TABLE 7. PROJECTIONS OF CONRAIL'S OPERATING EXPENSES UNDER ALTERNATIVE EFFICIENCY RATE ASSUMPTIONS
(In millions of current dollars)

Efficiency Rate (percent)	Actual	Base Case		Low Case	
	1985	1990	1995	1990	1995
0.0	2,774	3,502	4,267	3,219	3,597
0.5	2,774	3,415	4,058	3,139	3,421
1.0	2,774	3,330	3,859	3,061	3,253
1.5	2,774	**3,247**	**3,668**	2,985	3,092
2.0	2,774	3,165	3,486	**2,910**	**2,939**
2.5	2,774	3,086	3,312	2,836	2,792
3.0	2,774	3,007	3,146	2,764	2,652
3.5	2,774	2,931	2,988	2,694	2,519
4.0	2,774	2,855	2,837	2,625	2,391
4.5	2,774	2,782	2,692	2,557	2,270
5.0	2,774	2,710	2,555	2,491	2,153

SOURCE: For 1985, Conrail; for 1990 and 1995, Congressional Budget Office.

NOTE: Does not include subsidiaries.

hibited Conrail from recovering increases in its costs, then management would have stronger incentives to reduce costs. Costs could be lowered by obtaining reductions in labor and input expenses, but management may be unwilling to disrupt its relationships with labor and suppliers of materials unless economic pressures warrant doing so. Moreover, if Conrail is unable to recoup its cost increases, then it may be forced to eliminate some of its least profitable traffic, thus raising the productivity of the system as a whole.

Estimates of Conrail's net operating income over a range of tariff recovery rates and operating efficiencies are shown in Tables 8 and 9 for the base case and low case, respectively. Reading the values for the tariff recovery rate and the rate of productivity growth on the diagonal from lower left to upper right (80/1.0, 70/1.5, 50/2.0, 30/2.5, 20/3.0) provides a representative trade-off between the two parameters, although the rate at which they are traded off cannot be predicted with certainty. In the base case, for example, net operating income (in real 1985 dollars) ranges from a low of $384 million to a high of $490 million in 1990, and from a low of $245 million to a high of $432 million in 1995. In comparison, net operating income was $388 million in 1985.

The values for the tariff recovery rate and the rate of productivity growth used in this analysis in the base case are 70 percent and 1.5 percent, respectively. In the low case, given the system's lower expected traffic, it is assumed that Conrail maintains lower tariff rates and has higher rates of productivity growth. Thus, a tariff recovery rate of 50 percent and a productivity growth rate of 2.0 percent are used. The resulting levels of net operating income by case for each year in the forecast period can be seen in Table 10. In the base case, net operating income (in current dollars) reaches a plateau of around $640 million in the early 1990s, coinciding with the peak level of tons hauled. In the low case, net operating income is at a low point of $308 million in 1988, coinciding with the bottom of the recession, and steadily climbs back to $515 million by 1995.

On the basis of net operating income alone, Conrail appears to be quite viable over the forecast period. Certainly in the base case, Conrail's performance is strong even in the face of heavy competitive pressures and only moderate increases in productivity. In the low case, while net operating income is lower, the trough of the recession does not force an operating loss and, despite the lower level of tons and strong restraint on pricing throughout the period, the level of projected net operating income appears reasonable for Conrail's requirements.

TABLE 8. PROJECTIONS OF NET OPERATING INCOME OVER A RANGE OF TARIFF RECOVERY RATES AND OPERATING EFFICIENCIES: BASE CASE

Tariff Recovery Rate (percent)	Actual	Efficiency Rate (percent) 1.0		1.5		2.0		2.5		3.0	
	1985	1990	1995	1990	1995	1990	1995	1990	1995	1990	1995
In Millions of Current Dollars											
20	388	153	-325	236	-136	318	47	398	220	476	386
30	388	223	-181	306	9	388	191	467	365	546	531
50	388	366	124	449	315	531	497	610	670	689	836
70	388	513	452	**596**	**643**	678	825	758	998	936	1,164
80	388	589	625	672	816	754	998	833	1,171	912	1,337
In Millions of Real 1985 Dollars											
20	388	126	-218	194	-91	261	31	327	148	391	260
30	388	183	-122	251	6	318	128	384	245	448	357
50	388	300	83	369	211	436	334	502	451	566	562
70	388	422	304	**490**	**432**	557	554	623	671	769	783
80	388	484	420	552	548	619	670	685	787	749	899

SOURCE: For 1985, Conrail; for 1990 and 1995, Congressional Budget Office.

NOTE: Does not include subsidiaries.

TABLE 9. PROJECTIONS OF NET OPERATING INCOME OVER A RANGE OF TARIFF RECOVERY RATES AND OPERATING EFFICIENCIES: LOW CASE

Tariff Recovery Rate (percent)	Efficiency Rate (percent)										
	Actual	1.0		1.5		2.0		2.5		3.0	
	1985	1990	1995	1990	1995	1990	1995	1990	1995	1990	1995
In Millions of Current Dollars											
20	388	94	-63	170	98	245	251	319	398	391	537
30	388	145	23	222	184	297	337	370	484	442	624
50	388	250	201	326	362	**401**	**515**	475	662	547	802
70	388	357	388	434	549	509	702	582	849	654	989
80	388	412	485	489	646	564	799	637	946	709	1,086
In Millions of Real 1985 Dollars											
20	388	80	-48	145	75	209	193	272	305	333	412
30	388	124	18	189	141	253	259	315	371	377	479
50	388	213	155	278	278	**342**	**396**	405	508	466	615
70	388	304	298	370	421	433	539	496	652	557	759
80	388	351	372	416	496	480	613	543	726	604	833

SOURCE: For 1985, Conrail; for 1990 and 1995, Congressional Budget Office.

NOTE: Does not include subsidiaries.

TABLE 10. PROJECTIONS OF CONRAIL'S NET OPERATING INCOME, 1986-1995
(In millions of dollars)

	Actual 1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Base Case											
Current Dollars	388	418	489	529	537	596	625	640	643	642	643
Real 1985 Dollars	388	403	454	471	460	490	493	485	468	450	432
Low Case											
Current Dollars	388	400	369	308	348	401	430	458	476	495	515
Real 1985 Dollars	388	385	340	276	303	342	359	374	381	388	396

SOURCE: For 1985, Conrail; for 1986-1995, Congressional Budget Office.

NOTE: The base case assumes a tariff recovery rate of 70 percent and productivity growth of 1.5 percent. For the low case, the assumed rates are 50 percent and 2.0 percent. Does not include subsidiaries.

Net operating income is an important financial measure, but it does not indicate whether Conrail has the resources to meet its nonoperating commitments, such as reinvestment in providing rail services, and it does not include nonoperating income. Cash flow, on the other hand, includes these nonoperating, longer-term costs and revenues, and is a better indicator of Conrail's viability as a company. Using the measures of net operating income estimated here, and the estimates of Conrail's capital program (Chapter IV), CBO then projects Conrail's net income and cash flow in Chapter V.

CHAPTER IV

PROJECTING CONRAIL'S CAPITAL PROGRAM AND CAPITAL CHARGES

Chapter Summary. The tonnage forecast from Chapter II indicates the potential use of the Conrail system and, consequently, the requirement for capital investment in the system to carry that traffic. The capital investment program projected by CBO for Conrail is designed to maintain the quality of the Conrail system at its current level while carrying the forecast tonnage over the next decade. This capital investment, in combination with past investments and assumptions about financing and depreciation rates, determines the level of Conrail's future capital charges, including depreciation, debt installments, and interest payments. Investment in the forecast period rises steadily in the base case from $501 million in 1986 to $942 million in 1995. In the low case, investment grows from $501 million in 1986 to $712 million in 1995. Because the levels of investment projected were chosen to maintain the present quality of the Conrail system, by definition they meet the viability criteria established at the start of this analysis.

Conrail's principal use of funds, after meeting operating expenses, is investment in its physical plant. This investment in the capital stock of the corporation is financed out of current income and through long-term debt. This chapter first projects Conrail's required capital investments over the forecast period and then estimates the capital charges that result from these and past investments. Capital investments and capital charges rise steadily over the period in both the base and low cases, reflecting continuous additions to the capital stock required to maintain the current quality of the Conrail system.

CAPITAL PROGRAM

Conrail's required capital investment over the forecast period is determined by its traffic level. The size of the system, the equipment required, and the

rate of wear all depend on the expected number of tons hauled. The projections of Conrail's capital spending in this study are predicated, therefore, on the macroeconomic and traffic forecasts presented in Chapter II. Any increases or decreases in projected or assumed ton levels would require a modification of the planned capital investment program.

While the level of expected traffic is a key determinant of the required level of capital investment, the actual level of funds expended is determined also by the level of inflation. Because inflation in the base case is nearly double the rate in the low case, the difference in spending between the cases appears to be greater than the difference in tonnage would indicate. In real 1985 dollars, total capital spending (investment) in 1990 is $597 million in the base case and $521 million in the low case, and in 1995 is $633 million and $546 million, respectively.

Assumptions and General Method

The following general assumptions are used in designing the capital program for the base and low cases. First, each component of the capital stock is sized for an average level of tons over the forecast period: 192 million tons in the base case and 180 million tons in the low case. Second, while the size of the total capital stock is fixed by the expected level of traffic over the period, changes in the capital stock (the annual investment program), are adjusted for expected cyclical fluctuations in the traffic level. Third, the cost of all capital goods is assumed to rise at the same rate as the projected general level of inflation. And fourth, Conrail's capital investment program planned for 1986 is assumed to be completed.

Conrail's capital program can be separated into three general classes of investments. The **discretionary track program** is the planned replacement of rails and ties and resurfacing of the track. These investments in the track structure are in addition to routine maintenance included in operating expenses. **Additions and improvements** are investments in structures other than track such as bridges, tunnels, yards, terminals, computers, and communications and signaling equipment. **Equipment purchases** are divided between investments in "nonrevenue" equipment such as locomotives, which do not carry revenue-producing freight, and "revenue" equipment, including freight cars and highway semitrailers, which carry Conrail's tonnage. Investment levels are projected for each of these categories as a function of the average total tons hauled over the period. Finally, projections are made of Conrail's investment in its subsidiaries, primarily for trucking equipment.

In estimating the appropriate size of the capital stock and the level of investment required to maintain it, actual units are used in some cases and expenditures are used in others. Units are used for the track program and for locomotive purchases. Projections of the track investment program are based on the actual miles of rail replaced and of track resurfaced and on the number of ties installed. Similarly, nonrevenue equipment purchases are based on the appropriate size of the locomotive fleet and the annual purchases of locomotives required to maintain it. Expenditures are used for revenue equipment and for additions and improvements. The actual breakdown of future investments in these categories to individual units was not feasible, and the level of investment is therefore projected at an aggregate expenditure level.

Discretionary Track Program

The discretionary track program is the largest category of capital spending. It includes expenditures for rail, ties, ballast, other track materials, and the labor and equipment associated with the track-laying program. Table 11 presents the discretionary track program by year for both cases.

Since the level of traffic is the key determinant of programmed track replacement, the estimates of track requirements differ somewhat between cases. In the base case, a steady-state track program geared to 192 million tons per year is adopted beginning in 1987, since traffic increases at a fairly uniform rate in this case. These expenditures are then adjusted each year for inflation to maintain investment at the real 1987 level. Although the traffic level varies during the forecast period, the total track program is designed to maintain adequate track investment given the overall level of traffic.

The 1987 steady-state track program adopted by CBO is based on a track investment program similar to the one projected for 1988 by Conrail in its June 1985 five-year outlook. The miles of rail replaced and the percentage of new rail installed will rise over the period from 1988 levels, but the increase in real costs that would result from such increases should be offset by productivity gains in the track replacement program. While these productivity gains are not explicitly calculated, it is assumed that improvements in efficiency on the order of those achieved in operating expenses (1.5 percent in the base case, and 2.0 percent in the low case) will be attained.

This same method is used in the low case but is geared to a steady-state level of 180 million tons. In this case, the investment schedule does

TABLE 11. PROJECTIONS OF CONRAIL'S CAPITAL INVESTMENT, 1986-1995
(In millions of dollars)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Base Case											
Discretionary Track	322	276	334	348	362	377	393	409	425	443	461
Additions and Improvements	142	116	134	140	146	152	158	164	171	178	185
Equipment	104	101	116	141	164	189	214	234	255	270	285
Nonrevenue	86	78	81	93	102	113	124	129	134	132	130
Revenue	18	23	35	48	62	76	90	105	121	138	155
Subsidiaries	6	8	8	9	9	9	10	10	11	11	11
Total Current Dollars	574	501	592	638	681	727	775	817	862	902	942
Total Real 1985 Dollars	574	484	549	568	583	597	612	619	628	631	633
Low Case											
Discretionary Track	322	276	312	321	331	338	345	353	360	368	375
Additions and Improvements	142	116	113	85	128	131	134	137	140	143	146
Equipment	104	101	101	104	118	135	156	165	175	178	182
Nonrevenue	86	78	77	79	86	96	111	113	115	111	107
Revenue	18	23	24	25	32	39	45	52	60	67	75
Subsidiaries	6	8	6	6	8	8	8	9	9	9	9
Total Current Dollars	574	501	532	516	585	612	643	664	684	698	712
Total Real 1985 Dollars	574	483	491	463	509	521	536	542	547	547	546

SOURCE: For 1985 and 1986, Conrail; for 1987-1995, Congressional Budget Office.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

not anticipate deferral of expenditures for track replacement during the recession, so that overinvestment occurs early in the forecast period. The 1987 level of track investment is based on expenditures for the track program in the 1984-1986 period. As in the base case, an implicit rate of productivity growth allows for an increase in the percentage of new rail installed over the period.

Additions and Improvements

The investments included in this category are more discretionary, as a class, than other elements of the capital program, and tend to be judged more strictly on their return on investment. As a result, they may be easily and properly deferred when the cost of funds rises or the availability of funds from cash flow drops.

The method used to estimate additions and improvements differs slightly for each case. In the base case, the 1987 level is the average of the 1985 and 1986 investment levels adjusted for inflation. This amount increases at the rate of inflation over the remainder of the forecast period. In the low case, the level of investment drops from 1986 to 1987 in proportion to the decline in tonnage. At the trough of the recession in 1988, additions and improvements are further reduced by 25 percent from the 1987 level. Beginning in 1989 and continuing through 1995, these investments return to their real trend level (see Table 11).

Equipment

Equipment expenditures are a function of the expected traffic level, since the required size of the equipment fleet is determined by the average annual tonnage over the forecast period. Annual investment in equipment to maintain the required fleet size is calculated for each case based on an average annual purchase rate. Actual investment in each year differs from this rate according to expected macroeconomic conditions, but the average investment over the forecast period is sufficient to maintain an adequate fleet size. Table 11 presents investment in both revenue and nonrevenue equipment for both cases.

In the base case, most equipment purchases are for nonrevenue equipment, primarily locomotives, until the last few years of the forecast period. The investment program for locomotives is designed to maintain a fleet that is equivalent to a 1986 level of 2,000 locomotives. For every two locomotives entering the fleet, however, three are retired, since the new locomotives are more powerful. As a result, and by assuming a 20-year

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economic life for each locomotive, the rate of investment (an average annual purchase of 66 locomotives) would yield a fleet size of 1,320 on a steady-state basis and a total purchase of 660 locomotives over the 10-year forecast period.

Revenue equipment such as freight cars and highway trailers is currently in surplus on the Conrail system and should remain so for the early years of the forecast period. Investment in revenue equipment therefore begins at the relatively low 1986 level and is increased each year by $11 million plus inflation. By 1994, the investment in revenue equipment exceeds that in locomotives. This trend should continue beyond the forecast period, since the required rate of investment in revenue equipment will grow as the revenue fleet ages and the rate of retirements increases.

In the low case, the rate of investment in locomotives is designed to yield a 1986 equivalent of 1,800 locomotives, or 1,200 on a steady-state basis with newer equipment. During the 1987-1988 recession, spending is held below the steady-state level. Investment is accelerated in the recovery period, however, so that a total of 600 locomotives are purchased over the forecast period.

Expenditures for revenue equipment in this case are held at the real 1986 level for the duration of the recession. Beginning in 1989, investment is increased annually by $6 million plus inflation. The rate of investment in revenue equipment is lower in this case because the total tonnage hauled over the period is approximately 7 percent less than in the base case (holding steady in the 1990s at about 180 million tons per year), and because the inflation rate is about half that in the base case.

Investment in subsidiaries such as Pennsylvania Truck Lines is primarily for equipment, such as semitrailers. In the base case, investment is held constant in real terms at the 1986 level. In the low case, the lower spending level of the 1984-1985 period is maintained in the recession. In 1989, spending returns to the 1986 level and increases with inflation thereafter.

CAPITAL CHARGES

Conrail's capital investment program is financed internally from current income and externally from the issuance of debt. After net operating income, depreciation is the principal internal source of funds. External financing can be in the form of capitalized long-term leases or long-term

debt. This section examines each of these sources and projects them based on Conrail's existing obligations and the capital programs outlined above.

Assumptions

The following assumptions were made in forecasting the financing of capital investment. First, all equipment and subsidiary investment is externally financed, while all additions and improvements and the discretionary track program are internally financed. This simplifying assumption is made to be roughly consistent with current practice within Conrail. Second, the external financing rate is one percentage point less than the rate on three-month Treasury bills in the relevant CBO macroeconomic forecast. The very low interest rate used here reflects the fact that the equipment financed externally is leased. Under these leasing arrangements, the lessee company realizes substantial tax benefits that allow the imputed interest rate calculated by discounting future lease payments to fall dramatically. The assumption used in this analysis, in fact, is a conservative one--many analysts foresee an effective interest rate two or more points below the Treasury bill rate. The cost to the government of these tax arrangements is not calculated in this report. Third, the half-year convention is used to calculate depreciation, debt installments, and interest payments. 1/

Depreciation

Depreciation is an annual charge a firm includes in its operating expenses for the consumption of part of its capital stock in producing output--an internal charge of the corporation for the use and deterioration of its own capital goods. The total cash flow obtained from operations is net operating income plus the amount of operating revenue that accrues to cover the depreciation portion of operating expenses.

CBO's calculations of depreciation charges for each category of capital goods (track, additions and improvements, and equipment) are based on Conrail's existing capital stock at the end of 1985 and on the net changes to that stock from yearly investments. The investment program in both the base and low cases therefore directly determines the value of future depreciation charges. The annual depreciation rates used in these calculations are 2.2 percent for track, 3.0 percent for additions and improvements, and 8.0 percent for equipment, as assumed by Conrail (see Tables 12 and 13).

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1. Under the half-year convention, all equipment acquisitions, debts, and debt repayments occur in the middle of the fiscal year.

TABLE 12. PROJECTIONS OF CONRAIL'S CAPITAL CHARGES, 1986-1995: BASE CASE
(In millions of current dollars)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CBO Three-Month T-Bill Rate	0.068	0.067	0.064	0.061	0.057	0.054	0.054	0.054	0.054	0.054
Financing Rate	0.058	0.057	0.054	0.051	0.047	0.044	0.044	0.044	0.044	0.044
Total Depreciation	232	229	230	240	252	267	281	297	315	336
Discretionary Track	62	68	73	80	87	95	102	110	118	127
Additions and Improvements	31	31	33	35	38	41	45	48	51	55
Equipment	139	130	124	125	127	131	134	139	146	154
Total Debt Installments	126	116	113	119	126	135	151	160	163	175
Previous Debt	126	104	92	87	82	77	77	69	54	47
New Investment Debt	a/	12	21	32	44	58	74	91	109	128
Total Interest	80	84	80	79	78	78	78	77	80	82
Interest on Previous Debt	80	74	64	56	48	41	34	26	21	16
Interest on New Debt	b/	10	16	23	30	37	44	51	59	66

SOURCE: For 1986, Conrail; for 1987-1995, Congressional Budget Office.

NOTE: Includes Conrail and subsidiaries.

a. Conrail's 1986 investment program includes new and previous debt installments.

b. Conrail's 1986 investment program includes new and previous interest payments.

TABLE 13. PROJECTIONS OF CONRAIL'S CAPITAL CHARGES, 1986-1995: LOW CASE
(In millions of current dollars)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
CBO Three-Month T-Bill Rate	0.076	0.077	0.059	0.056	0.049	0.043	0.043	0.043	0.043	0.043
Financing Rate	0.066	0.067	0.049	0.046	0.039	0.033	0.033	0.033	0.033	0.033
Total Depreciation	232	229	225	231	238	247	256	266	278	291
Discretionary Track	62	68	72	79	86	92	99	106	113	120
Additions and Improvements	31	31	32	33	35	38	40	43	46	49
Equipment	139	130	121	119	117	117	117	117	119	122
Total Debt Installments	126	115	111	113	117	123	134	138	135	141
Previous Debt	126	104	92	87	82	77	77	69	54	47
New Investment Debt	a/	11	19	26	35	46	57	69	81	94
Total Interest	80	85	80	76	72	69	65	60	58	55
Interest on Previous Debt	80	74	64	56	48	41	34	26	21	16
Interest on New Debt	b/	11	16	20	24	28	31	34	37	39

SOURCE: For 1986, Conrail; for 1987-1995, Congressional Budget Office.

NOTE: Includes Conrail and subsidiaries.

a. Conrail's 1986 investment program includes new and previous debt installments.

b. Conrail's 1986 investment program includes new and previous interest payments.

In the base case, the combined depreciation charges for track and for additions and improvements double by 1995. Equipment depreciation grows only slightly as additions to the capital stock are offset by the expiration of the depreciable lives (though not the useful lives) of previous investments.

The lower depreciation charges on track and on additions and improvements in the low case are a result of that case's smaller investment program and lower inflation. Equipment depreciation drops in this case, since the depreciation on the additions to the capital stock are more than offset by the expiration of depreciation on previous investments.

Debt Installments and Interest Payments

External financing consists of long-term debt obligations and capitalized long-term leases--that is, a firm may either borrow to purchase its capital goods, or may lease its equipment from others. The choice of leasing versus debt is generally one of tax consequences. In the absence of expected tax liabilities, leasing would generally be chosen and vice versa. The effect on required capital expenditures is approximately the same in both cases, though the effective interest rate will be lower through leasing. This study assumes that equipment is leased throughout the forecast period, and the financing rate reflects this assumption.

Capital charges arising from the financing of equipment and subsidiary investments include both principal payments to retire the current portion of the debt and the interest payments on the outstanding debt. The schedule of payments and interest for the debt existing as of the end of 1985 was provided by Conrail. Applying the assumed financing rate and a term of 15 years, debt and interest payments are calculated on the additions to the capital stock from the investment program in each case, and are added to these schedules to produce total debt and interest payments for each year.

In the base case, principal payments first dip and then rise as the steady rate of equipment investment increases the outstanding level of debt (see Table 12). Interest payments remain essentially constant, however, since the interest rates on new debt are lower than those on debt being retired. In the low case, principal payments dip and remain below the 1986 level until 1992 because of the restrained level of new investment during and after the recession (see Table 13). Interest payments decline steadily after 1987 because both debt levels and interest rates are lower than in the base case.

The capital programs projected here are designed to fulfill the capital needs generated by the predicted traffic in each case. For an average tonnage of 192 million tons in the base case, capital investment ranges from $501 million in 1986 to $942 million in 1995. According to CBO's projections, in 1995 Conrail will accrue depreciation charges of $336 million and incur debt payments of $175 million toward the financing of this capital program. In the low case, capital investment reflects the decrease in the ton level to 180 million tons, and ranges from $501 million to $712 million over the forecast period. The depreciation charges rise to $291 million in 1995, and the debt payments incurred are $141 million by that year.

In order to carry this traffic and maintain the quality of its capital stock, Conrail must be able to finance these required capital programs. Projections for Conrail's capital expenditures are incorporated into the cash flow analysis in the next chapter.

CHAPTER V

PROJECTING CONRAIL'S CASH FLOW

Chapter Summary. Projections of Conrail's net income and cash flow indicate its profitability in the short run and its viability in the long run. Estimates of Conrail's net income include projections of net operating income, capital gains on property sales, net interest income, and other miscellaneous sources of income. In the base case, net income rises from $448 million in 1986 to a peak of $604 million in 1992 and then declines slightly to $588 million in 1995. In the low case, net income declines from $437 million in 1986 to a low of $279 million at the trough of the recession in 1988, and then increases steadily to a peak of $468 million in 1995. Projections of Conrail's cash flow are constructed using its total sources of cash including net income, depreciation, property sales, and changes in working capital, and Conrail's total uses of cash including capital net of financing, debt installments, and payments to the federal government. In the base case, cash balances are projected to increase through 1987 to a total of approximately $1.3 billion and then to decline continuously through 1995 to an ending balance of $356 million. In the low case, cash balances also peak at the end of 1987 at $1.2 billion and decline steadily to $243 million at the end of 1995. Although Conrail's cash balances are being consumed in both cases, they remain positive throughout the next decade.

Conrail's cash flow over the forecast period is an important indication of its ability to remain viable as an independent company. Cash flow indicates whether Conrail is generating sufficient funds from operating and non-operating sources to maintain its physical plant, meet its debt payments, and provide for dividend payments to shareholders. In addition, if potential lenders view Conrail as a high risk and are unwilling to provide temporary financing in an unanticipated or extended downturn in the economy, an internal source of funds such as a cash reserve would provide financing during an unforeseen decline in net income. Therefore, Conrail's ability to maintain an adequate cash reserve over the forecast period may indicate its inherent strength as an independent company.

Conrail's annual cash flow statement shows the net change in its cash balance from the corporation's operating, investment, and financial transactions. Cash flow depends on the total sources of funds to the firm and the total uses of those funds. Conrail's main source of funds is net operating income; its main use of funds is the capital program net of external financing. This chapter discusses estimates of Conrail's sources and uses of cash, and projects Conrail's resulting cash flow for both the base case and the low case.

SOURCES OF FUNDS

Conrail's principal sources of funds are net income, noncash items, property sales, and changes in working capital. Each of these sources is estimated for the forecast period, and their sum is the total cash available to the firm. The forecasts of Conrail's sources of cash for the base case and low case are shown in Tables 14 and 15.

Net Income

Conrail's annual net income is both the principal measure of its profitability and the principal source of funds for nonoperating expenses. It shows whether the firm is generating sufficient funds to meet all operating expenses. The level of positive net income also indicates the ability of operations to provide funds for reinvestment in the company.

Net income after taxes is assumed to equal net income before taxes in the baseline scenario. Over the forecast period, Conrail's tax liabilities should be completely offset by its tax basis depreciation, investment tax credits, and net operating loss carryforwards. Therefore, Conrail's effective tax rates, actual tax liabilities, and extraordinary (tax) credits are not estimated. Moreover, any estimate of these tax payments would be subject to significant revisions should tax reform measures be enacted by the Congress.

Net income is the sum of net operating income and nonoperating income. **Net operating income**, projected in Chapter III, is total operating revenue less total operating expenses; it includes only income generated by or directly associated with operations. **Nonoperating income** is generated by other activities of the corporation--principally financial transactions--and consists of net interest income, capital gains on property sales, and other

miscellaneous income. Net interest income is interest earned on cash investments less the interest paid on external debt, which includes the long-term debt used to finance equipment and the debentures issued to the federal government. Although property sales are principally a transformation of the company's physical assets into cash or financial assets, any capital gains on the sales are considered income to the company and must be included in net income. "Other" income is primarily from rent but also comes from miscellaneous sources that vary from year to year.

In both the base case and low case, net interest is calculated from projections of interest income, interest expense on outstanding debt, and debenture interest due the government. Interest income is based on the average cash balance for each year. The average cash balance is obtained by estimating the net change in cash for the year without interest income, and by assuming a steady accumulation of the resulting change in cash during the year. Interest is earned at year-end on the average cash balance using the three-month Treasury bill rate from CBO's macroeconomic forecast. Interest on outstanding debt for each case is calculated as detailed in Chapter IV. Interest on the debentures issued to the government in exchange for past federal investment in Conrail is calculated on an outstanding balance of $850.9 million and by using the stipulated rate of 7.5 percent. Interest payments in cash on these debentures must begin in 1988 according to a formula that is discussed below in the section on payments to the government. The interest on debentures is $63.8 million a year in both the base case and the low case.

Conrail's own estimates of capital gains on property sales are used in CBO's projections through 1989. For the remainder of the forecast period, the 1989 level is increased with inflation so that the real value of capital gains remains constant after 1989. This method is used in both the base and low cases.

Other nonoperating income consists primarily of rental income for both right-of-way and other property. In the base case, Conrail's estimates provide the basis for the forecast through 1989, at which point the value of other income grows with inflation. In the low case, other income grows from 1986 through the recession at two percentage points less than the base case and then grows with inflation thereafter.

The projections of net income and its constituents are shown for the base case and low case in Tables 14 and 15. In both cases, nonoperating income turns negative in 1988 when payments to the government begin and interest on debentures is required. The additional interest expense from

TABLE 14. PROJECTIONS OF CONRAIL'S SOURCES OF CASH, 1986-1995: BASE CASE
(In millions of current dollars)

Sources of Cash	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Net Income After Federal Income Tax a/	442.2	448.0	530.3	512.1	515.0	568.8	592.5	603.8	603.3	595.5	587.5
Operating Income	397.0	417.5	489.2	528.8	537.0	596.4	625.1	639.7	642.8	642.4	642.6
Nonoperating Income	45.2	30.5	41.1	-16.7	-22.0	-27.6	-32.6	-35.9	-39.5	-46.9	-55.1
Capital gains b/	38.0	14.4	17.0	18.0	18.0	18.7	19.5	20.3	21.1	22.0	22.9
Net Int.	-21.4	-14.0	-6.8	-69.5	-76.8	-84.7	-92.0	-97.7	-103.8	-113.9	-124.9
Int. paid	-84.9	-80.0	-83.8	-80.5	-79.4	-78.4	-78.3	-78.3	-77.5	-79.7	-81.7
Int. on debentures	0.0	0.0	0.0	-63.8	-63.8	-63.8	-63.8	-63.8	-63.8	-63.8	-63.8
Int. earned	63.5	66.0	77.0	74.8	66.4	57.5	50.1	44.4	37.5	29.6	20.6
Other	28.6	30.1	30.9	34.8	36.8	38.4	39.9	41.5	43.2	45.0	46.9
Noncash Items	227.0	224.0	220.6	220.2	229.3	240.9	253.6	266.9	281.9	299.2	318.8
Depreciation	231.0	232.0	229.6	230.2	240.3	252.9	266.6	280.9	296.9	315.2	335.8
Other	-4.0	-8.0	-9.0	-10.0	-11.0	-12.0	-13.0	-14.0	-15.0	-16.0	-17.0
Property Sales	65.0	44.6	41.0	41.0	41.0	42.6	44.4	46.3	48.1	50.1	52.1
Changes in Working Capital	-95.0	-21.0	-25.0	-30.0	-35.0	-40.0	-45.0	-47.0	-49.0	-51.0	-53.0
Total Sources	639.2	695.6	766.9	743.3	750.3	812.3	845.5	870.0	884.3	893.8	905.4

SOURCE: For 1985, Conrail; for 1986-1995, Congressional Budget Office.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

a. Federal income tax is assumed to be zero.

b. Capital gains on property sales.

TABLE 15. PROJECTIONS OF CONRAIL'S SOURCES OF CASH, 1986-1995: LOW CASE
(In millions of current dollars)

Sources of Cash	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Net Income After Federal Income Tax a/	442.2	437.4	416.1	279.0	313.7	360.1	384.1	412.1	431.5	448.7	467.8
Operating Income	397.0	399.8	368.5	308.3	348.1	401.4	430.4	458.0	476.4	495.2	515.4
Nonoperating Income	45.2	37.6	47.6	-29.3	-34.4	-41.3	-46.3	-45.9	-44.9	-46.5	-47.6
Capital gains b/	38.0	14.4	17.0	18.0	18.0	18.4	18.8	19.2	19.6	20.0	20.4
Net interest	-21.4	-6.9	0.1	-81.2	-87.8	-95.9	-102.0	-102.9	-103.0	-105.8	-108.1
Int. paid	-84.9	-80.0	-84.7	-80.0	-76.2	-72.2	-68.6	-64.7	-59.7	-57.6	-55.1
Int. on debentures	0.0	0.0	0.0	-63.8	-63.8	-63.8	-63.8	-63.8	-63.8	-63.8	-63.8
Int. earned	63.5	73.1	84.8	62.6	52.2	40.1	30.4	25.6	20.5	15.6	10.8
Other	28.6	30.1	30.5	33.9	35.4	36.2	36.9	37.8	38.5	39.3	40.1
Noncash Items	227.0	224.0	219.4	215.3	219.4	226.2	234.0	242.1	251.1	261.7	273.7
Depreciation	231.0	232.0	228.4	225.3	230.4	238.2	247.0	256.1	266.1	277.7	290.7
Other	-4.0	-8.0	-9.0	-10.0	-11.0	-12.0	-13.0	-14.0	-15.0	-16.0	-17.0
Property Sales	65.0	44.6	41.0	41.0	41.0	41.8	42.8	43.7	44.5	45.5	46.4
Changes in Working Capital	-95.0	-21.0	-21.8	-22.8	-23.4	-24.1	-24.7	-29.7	-34.7	-39.7	-44.7
Total Sources	639.2	685.0	654.7	512.5	550.7	604.0	636.2	668.2	692.4	716.2	743.2

SOURCE: For 1985, Conrail; for 1986-1995, Congressional Budget Office.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

a. Federal income tax is assumed to be zero.

b. Capital gains on property sales.

debentures causes net interest to become negative at that point. Over the remainder of the forecast period, net interest becomes increasingly negative as interest earned on cash investments drops because of the heavy drain on current income and cash resources from payments to the government. Although other income and capital gains on property sales increase during this period, they are insufficient to offset the decline in interest income.

In the base case, the negative net interest results in a steady decline in nonoperating income by $5 million to $8 million a year through 1995. In the low case, interest on debentures remains constant as it does in the base case, but interest on external debt declines, thereby helping to offset the effect of lower interest income. As a result, nonoperating income levels off at approximately –$46 million a year in the 1991-1995 period. In both the base case and low case, net income after federal income taxes is lower than net operating income because of the high charge against net income for total interest expenditures.

Noncash Items

Noncash items consist primarily of the noncash charge against operating income for depreciation. Since the depreciation charge is retained as cash and results in no outlay, it must be added to net operating income to get the actual cash flow from operations. Conrail's depreciation charges are estimated by the method described in the previous chapter, and those estimates are used in the cash flow statement. Noncash items also include a provision for adjustments to casualty reserves, which is also a noncash source of income and must be subtracted from the cash flow statement. This amount is assumed to grow by $1 million a year, from $8 million in 1986 to $17 million in 1995. In both the base case and the low case, the value of noncash items dips somewhat in the 1987-1988 period (more so in the low case because of lower investment in equipment during the recession) and then grows steadily through the remainder of the forecast period (see Tables 14 and 15).

Property Sales

Property sales represent the transformation of physical assets, such as real estate or scrap materials, into cash. Such transactions do not change the company's total assets, but they do increase the amount of cash held by the firm. The value of property sales is reduced by the capital gain that is already accounted for in net income. The remainder is a source of cash in the cash flow statement. Property sales are projected using Conrail's

estimates of property sales through 1989; thereafter, the 1989 value is increased with inflation to maintain a constant real level of property sales (see Tables 14 and 15).

Changes in Working Capital

Changes in working capital are allowances for income credited as earned but not yet received, or for expenses credited as paid but not yet expended. In this study, a positive net change in working capital represents funds tied up in the operation of the firm and as such represents a negative source of funds. It is assumed that, as Conrail's revenue rises over time, these net funds owed to the firm will increase. While traffic is growing in the base case, these funds are increased at a rate of $5 million a year faster than inflation. When traffic levels off in 1992, increases in working capital grow only with inflation. In the low case, changes in working capital increase with inflation throughout the forecast period. Tables 14 and 15 show these projections for each case.

USES OF FUNDS

Conrail uses funds for capital net of financing, for the current portion of long-term debt, and for payments to the government. Expenditures for capital net of financing and the current portion of long-term debt depend directly on the previous and projected levels of capital investment. The projections of Conrail's capital program and capital charges used in the cash flow statement are those derived in Chapter IV and are presented in Table 16. Payments to the government are discussed below.

Payments to the Federal Government

The federal government holds Conrail's long-term debt, preferred stock, and common stock as compensation for previous investments in the corporation. The long-term debt, which totals $850.9 million, is in the form of 7.5 percent debentures, all of which are held by the U.S. Railway Association. Conrail has two series of preferred stock outstanding: USRA holds all of the 25.6 million shares of Series A issued, and the Department of Transportation holds all of the 31.7 million shares of Series B issued. In addition, the government owns 85 percent of the common stock of the corporation.

TABLE 16. PROJECTIONS OF CONRAIL'S USES OF CASH, 1986-1995
(In millions of current dollars)

Uses of Cash	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Base Case											
Capital Net of Financing	449	383	468	488	508	529	550	573	596	621	646
Debt Installments	126	126	116	113	119	126	135	151	160	163	176
Payments to Government	0	0	0	265	288	289	316	328	334	334	330
Interest on debentures	0	0	0	64	64	64	64	64	64	64	64
Series A dividends	0	0	0	192	192	192	192	192	192	192	192
Series B dividends	0	0	0	10	32	34	61	73	78	78	74
Total uses	575	509	584	866	915	945	1,002	1,052	1,090	1,118	1,151
Low Case											
Capital Net of Financing	449	383	425	406	459	469	479	489	500	510	521
Debt Installments	126	126	115	111	114	117	123	134	138	135	141
Payments to Government	0	0	0	208	171	189	212	224	238	248	256
Interest on debentures	0	0	0	64	64	64	64	64	64	64	64
Series A dividends	0	0	0	144	107	125	148	160	174	184	192
Series B dividends	0	0	0	0	0	0	0	0	0	0	0
Total uses	575	509	540	725	744	775	814	847	876	893	918

SOURCE: For 1985 and 1986, Conrail; for 1987-1995, Congressional Budget Office.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

Formula for Determining Payments. Conrail is required to make interest, dividend, and principal payments to the government under terms specified in the May 1979 Amended and Restated Financing Agreement between USRA and Conrail. Cash payments are not required until Conrail's cumulative deficit has been erased and cumulative net income exceeds $500 million. At that time, total annual payments to the government would be equal to the amount by which cumulative net income exceeds $500 million (excluding previous payments to the federal government from cumulative net income), or one-half of the previous year's net income, whichever is lower. The priority of claims on the cash available for payments is as follows: interest on debentures, dividends on Series A preferred stock, dividends on Series B preferred stock, payments of principal on debentures, and redemption of Series A preferred stock. There is no mandatory redemption of Series B preferred stock.

In the event that cash payments would be triggered, annual interest due on the debentures equals $63.8 million. Dividends due on the Series A preferred stock are equal to $7.50 per share outstanding, or a total of $191.7 million. Dividends due on the Series B preferred stock are equal to $5.00 per share outstanding or $158.7 million. Cash interest and dividend payments, therefore, could total $414.2 million. This annual amount is not cumulative--any interest or dividends that cannot be paid in the year they are due are not due in any subsequent years. If the previous year's net income exceeds $828.4 million--twice the total of cash interest and dividend payments--then the additional cash available for the year's payment to the government is applied to the redemption of the principal amount of the debentures. If all debentures have been redeemed, then any excess amount is applied to the redemption of Series A preferred stock.

Forecasting Payments. Payments to the government based on this formula will begin in 1988 in both the base and low cases. In the base case, cumulative net income is $866 million at the end of 1987, exceeding the stipulated amount of $500 million by $366 million, which is more than $265 million (one-half of net income in 1987). Consequently, a payment to the government of $265 million is due on April 30, 1988, consisting of $63.8 million in interest, $191.7 million in Series A dividends, and $9.5 million in Series B dividends. Annual payments to the federal government rise to $330 million under the base case in 1995.

In the low case, cumulative net income exceeds $500 million by $242 million at the end of 1987. This is more than $208 million, or one-half of 1987 net income. Therefore, payments of $63.8 million in interest and $144.2 million in dividends on Series A preferred stock are due on April 30,

1988, in this case. No payments are made on Series B stock since the cash available for payments is insufficient to pay the total dividends due on Series A preferred stock. For both cases, the payments due the government in each subsequent year are one-half of the previous year's net income.[1] Table 16 shows projections for payments to the government by year for both the base and low cases.

CONRAIL'S CASH FLOW

Projections of Conrail's cash flow for the base and low cases are shown in Tables 17 and 18, respectively. The form of the cash flow statement is the same in both cases: total sources of funds, divided between funds from operations and other sources, are listed first; total uses are listed next; and, finally, the effect on cash balances from net cash flow in each year is presented. The change in cash for each year is total sources of funds minus total uses. Summing this change in cash with the beginning cash balance yields the cash balance at the end of the year.

Two items need to be clarified in the cash flow statement. First, changes in working capital can be either a positive or negative source of funds. CBO's assumption that there are continuous and growing additions to working capital makes these changes a negative source-- equivalent to a use--throughout the forecast period in both the base and low cases. Second, since interest on debentures has been expensed as a cost of capital in net income, uses of funds include the dividend payments on Series A and Series B preferred stock but do not include interest on debentures, to avoid double counting these payments. Consequently, actual total payments to the government in each year after 1987 are the sum of interest on debentures of $63.8 million a year and the dividend payments from Tables 17 and 18.

Base Case

The projected change in cash is positive and significant in 1986 and 1987 in this case. When payments to the government begin in 1988, however, changes in cash turn negative and remain so for the forecast period. This

1. For the years after 1988, the calculation is based on the previous year's net income before interest on debentures is paid.

excess of uses over sources is funded by drawing down existing cash balances. The effect of this cash drain can be seen in the ending cash balances in Table 17.

The ending cash balance peaks in 1987 at about $1.3 billion and declines thereafter. By the end of 1991, cash balances have returned to their level at the beginning of the forecast period. They decline by an average of $150 million per year over the next four years when payments to the government average $330 million per year. Undiscounted total payments to the government over the forecast period are about $2.5 billion, including $550 million from cash balances existing at the end of 1985 and $1.9 billion from income earned over the period. In 1995, Conrail's ending cash balance is $356 million.

Low Case

As in the base case, the change in cash is positive in 1986 and 1987 and turns negative in 1988 with the start of payments to the government. Net cash flow in the 1987-1988 period is about –$34 million in this case as a result of the recession, compared with $124 million in the base case. From 1988 to 1995, the decline in cash balances is nearly steady at an average annual level of $116 million.

Ending cash balances peak at $1.2 billion in 1987 and then decline by 1989 to their level at the start of the forecast period. The steady decline through 1995 yields a cash balance of $243 million in that year. Over the forecast period, cumulative undiscounted payments to the government would be about $1.8 billion, including $670 million from current cash balances and $1.1 billion from income earned over the period.

In both cases, ending cash balances remain positive during the forecast period, but they fall below the $500 million level in 1995 for the base case and in 1993 for the low case. While funds from operations are sufficient to cover operating expenses and to reinvest in the firm throughout the forecast period in the base case and after the recession in the low case, making payments to the government requires the drawdown of cash balances. It appears that sustaining the high levels of cash payments required by the baseline financing agreement will exhaust Conrail's cash reserves in a few years beyond the forecast period. Nonetheless, the results of the net income and cash flow analyses demonstrate that Conrail should be able to meet its obligations over the next decade.

TABLE 17. PROJECTIONS OF CONRAIL'S CASH FLOW, 1986-1995: BASE CASE
(In millions of current dollars)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Total Sources	639	696	767	743	750	812	845	870	884	894	905
Net Income	442	448	530	512	515	569	592	604	603	596	588
Noncash Items	227	224	221	220	229	241	254	267	282	299	319
Funds from Operations	669	672	751	732	744	810	846	871	885	895	906
Property Sales	65	45	41	41	41	43	44	46	48	50	52
Change in Working Capital	-95	-21	-25	-30	-35	-40	-45	-47	-49	-51	-53
Total Uses	575	509	584	803	851	881	938	988	1,026	1,054	1,087
Capital Net of Financing	449	383	468	488	508	529	550	573	596	621	646
Debt Installments	126	126	116	113	119	126	135	151	160	163	176
Dividends to Government a/	0	0	0	201	224	226	253	264	270	270	266
Change in Cash	64	187	183	-59	-101	-69	-93	-118	-142	-160	-182
Beginning Cash Balance	846	910	1,097	1,280	1,220	1,120	1,051	959	840	699	538
Ending Cash Balance	910	1,097	1,280	1,220	1,120	1,051	959	840	699	538	356

SOURCE: For 1985, Conrail; for 1986-1995, Congressional Budget Office. Capital net of financing and debt installments for 1986 were also supplied by Conrail.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

a. Does not include $63.8 million in interest on debentures that is paid to the federal government and expensed in net income.

TABLE 18. PROJECTIONS OF CONRAIL'S CASH FLOW, 1986-1995: LOW CASE
(In millions of current dollars)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
Total Sources	639	685	655	512	551	604	636	668	692	716	743
Net Income	442	437	416	279	314	360	384	412	432	449	468
Noncash Items	227	224	219	215	219	226	234	242	251	262	274
Funds from Operations	669	661	636	494	533	586	618	654	683	710	742
Property Sales	65	45	41	41	41	42	43	44	45	46	46
Change in Working Capital	-95	-21	-22	-23	-23	-24	-25	-30	-35	-40	-45
Total Uses	575	509	540	661	680	711	750	783	812	829	854
Capital Net of Financing	449	383	425	406	459	469	479	489	500	510	521
Debt Installments	126	126	115	111	114	117	123	134	138	135	141
Dividends to Government a/	0	0	0	144	108	125	148	160	174	184	192
Change in Cash	64	176	114	-148	-129	-107	-114	-115	-120	-113	-111
Beginning Cash Balance	846	910	1,086	1,201	1,052	923	815	702	587	467	354
Ending Cash Balance	910	1,086	1,201	1,052	923	815	702	587	467	354	243

SOURCE: For 1985, Conrail, for 1986-1995, Congressional Budget Office. Capital net of financing and debt installments for 1986 were also supplied by Conrail.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

a. Does not include $63.8 million in interest on debentures that is paid to the federal government and expensed in net income.

The preceding analysis forms the foundation for the discussion of Conrail's viability. The next chapter examines this viability by integrating the traffic forecast, the projected operating results, the projected capital requirements, and the resulting cash flow. Policy options conclude the discussion.

CHAPTER VI

THE VIABILITY OF CONRAIL AND ITS POLICY IMPLICATIONS

The projections of Conrail's operating and financial results suggest that Conrail is viable as an ongoing company. This viability depends, however, on the assumptions made about the macroeconomic and operating environments that Conrail will face over the next decade. Conrail's viability under a range of assumptions is examined in this chapter.

This chapter first reviews the estimates from Chapters II through V of Conrail's traffic, net operating income, capital program, net income, and cash flow under current (baseline) policy and compares those projections with Conrail's performance in 1984 and 1985. Second, while maintaining the same macroeconomic and baseline assumptions, alternative assumptions for the levels of the tariff recovery rate and the rate of productivity growth are examined for their effects on Conrail's income and cash flow. Third, the baseline assumptions concerning the legal and financial structure of the corporation are changed to reflect Conrail's performance on a stand-alone basis, and the resulting effects on Conrail's net income, cash flow, and potential viability are projected. Finally, the policy options available to the Congress in returning Conrail to the private sector in light of the viability analysis, and a discussion of what the Conrail system is worth, conclude the chapter.

VIABILITY UNDER CURRENT POLICY

According to the criteria for viability established at the outset of this study, Conrail will remain viable over the next decade whether the base or low macroeconomic case occurs. Those criteria are that (1) absent extensive economic dislocations in the region it serves, Conrail should be able to maintain its traffic base within the range of its recent experience, (2) net operating income should remain positive and at a level consistent with the size of the railroad and the traffic it carries, (3) capital investment levels should be sufficient to maintain the quality of the track and equipment at current levels, and (4) net income and cash flow from operations should be sufficient to meet the firm's capital, debt, and dividend requirements.

The only area in which this conclusion might be qualified is the dividend payment required under the current financing agreement, since part of the dividend payment in both cases is paid out of cash balances and not entirely from current operations. However, both the level of dividends paid and the contribution of current income to those payments are substantial. In light of the very stringent cash dividends required by the financing agreement, Conrail is certainly viable in the baseline scenario.

The benchmarks for comparison of the forecast results are the years 1984 and 1985. Conrail's strong performance in these years indicates the company's capabilities in years of both high (1984) and moderate (1985) traffic. If Conrail can continue to produce, on average, operating and financial results comparable to these years, it should be able to survive as an independent railroad. Therefore, the projections in each of the categories above are compared with this recent experience to gauge the potential for Conrail's viability. Table 19 provides a summary of CBO's projections. Dollar amounts in the table are given in current dollars, while the text discussion also includes those amounts in real dollars to depict more accurately the trend in these variables.

The base-case forecast is the principal basis for the finding of Conrail's viability. The low-case scenario indicates the sensitivity of the forecast to a recession in the economy and the decline in demand for Conrail's services. The low case, while reducing Conrail's traffic, does not severely diminish it. It does diminish the profitability of the corporation, but would not threaten the viability of Conrail as an independent railroad over the next decade and beyond.

Traffic

In the base case, Conrail is projected to haul an average of about 192 million tons annually over the forecast period. This is the level of traffic Conrail carried in 1984. The peak tonnage over the period is 195 million tons and the lowest is 185 million tons at the start of the period. This level of traffic would be sufficient to use efficiently Conrail's available capacity.

In the low case, the traffic forecast predicts an average of 178 million tons a year over the forecast period. Traffic ranges from a peak of 184 million tons in 1986 to a low of 170 million tons in 1988 at the trough of the recession, recovering to 180 million tons in 1995. While the level of traffic averages 14 million tons per year less than in the base case, it is approximately the level actually carried in 1982, 1983, and 1985. The 1987-1988 recession would reduce Conrail's traffic significantly from the base-case

level, but, at the trough, traffic would be only 6 percent lower than in 1985. Traffic would be reduced in this case, but would not decline below levels of recent, profitable years.

Net Operating Income

Net operating income in the base case (in current dollars) rises from $418 million in 1986 to $643 million in 1995, compared with $450 million and $388 million in the benchmark years of 1984 and 1985. Real net operating income ranges from a low of $403 million in 1986 to a peak of $493 million in 1991, declining to $432 million in 1995. These values are comparable to real levels of $465 million in 1984 and $388 million in 1985. The level of net operating income, therefore, remains positive throughout the forecast period and is comparable to Conrail's recent income levels.

In the low case, net operating income ranges in current dollars from a low of $308 million in 1988 to a peak of $515 million in 1995. In real terms, net operating income ranges from $276 million in 1988 to $396 million in 1995. While net operating income remains positive throughout the period, the average real level is $354 million a year, slightly below the 1985 level. At the end of the forecast period, however, Conrail's real net operating income would be above the 1985 level.

Capital Program and Net Income

The capital programs are designed to maintain the Conrail system at its current standards of quality and scale given its expected traffic in each case. Conrail should have the resources to maintain its capital stock at these levels. The charges flowing from the capital program affect both net income and cash flow, and whether Conrail can carry these charges annually is important to its viability.

In the base case, Conrail's net income in current dollars ranges from a low of $448 million in 1986 to a peak of $604 million in 1992, declining slightly to $588 million in 1995. Real net income peaks at $492 million in 1987, ranges between $440 million and $468 million through 1993, and then declines to $395 million in 1995. These levels of real net income are commensurate with the levels in the benchmark years ($517 million in 1984 and $442 million in 1985) and appear to be within a reasonable range for the size of the corporation and the traffic carried.

In the low case, net income in current dollars ranges from a low of $279 million in 1988 to a high of $468 million in 1995. Real net income

declines from $421 million in 1986 to a low of $266 million in 1988 and rises steadily to $359 million in 1995. These values are below the level of recent experience and indicate the effect of the recession on Conrail's profitability. But while net income is reduced in this case, it remains substantial throughout the recession and early recovery period. Nevertheless, the reduced level of income produced in this case may be indicative of problems for Conrail should the low-case scenario occur.

The analysis in both cases indicates that Conrail will produce strong financial results over the forecast period, although there is the risk of some weakness in Conrail's net income in the low case. Whether these projected levels of net income are sufficient will depend on the cash requirements of the firm as reflected in the cash flow statement.

TABLE 19. SUMMARY OF CBO'S PROJECTIONS FOR CONRAIL

	Actual				
	1984	1985	1986	1987	1988
Base Case					
Tons	192	181	185	188	190
Net Operating Income	450	388	418	489	529
Capital Investment	555	574	501	592	638
Net Income	500	442	448	530	512
Ending Cash Balance	846	910	1,097	1,280	1,220
Low Case					
Tons	192	181	184	179	170
Net Operating Income	450	388	400	369	308
Capital Investment	555	574	501	532	516
Net Income	500	442	437	416	279
Ending Cash Balance	846	910	1,086	1,201	1,052

NOTE: Tons are in millions of tons; all other numbers are in millions of current dollars. Total tons and net operating income do not include subsidiaries. All other numbers include subsidiaries.

Cash Flow

In the base case, Conrail's cash flow is strong throughout the forecast period. Cash on hand rises to a peak of nearly $1.3 billion at the end of 1987. While the change in cash becomes negative in 1988 and thereafter, Conrail's annual change in cash is positive and large before the interest and dividend payments to the government are made. This change in cash ranges from a high of $224 million in 1991 to a low of $148 million in 1995, and averages $195 million over the 1988-1995 period.

The payments to the government must be subtracted from the initial annual change in cash, however, and they are a severe drain on Conrail's cash resources. These payments include $64 million a year for interest on

TABLE 19. (Continued)

1989	1990	1991	1992	1993	1994	1995
			Base Case			
191	194	194	195	195	193	192
537	596	625	640	643	642	643
681	727	775	817	862	902	942
515	569	592	604	603	596	588
1,120	1,051	959	840	699	538	356
			Low Case			
176	177	177	179	180	179	180
348	401	430	458	476	495	515
585	612	643	664	684	698	712
314	360	384	412	432	449	468
923	815	702	587	467	354	243

SOURCE: For 1984 and 1985, Conrail; for 1986 to 1995, Congressional Budget Office. Total capital investment is from Conrail for 1986.

debentures and a yearly average of $247 million for dividends. This average annual payment of $311 million over the 1988-1995 period results in an average cash drain of $195 million per year from current income and $116 million per year from existing cash balances. This drain on existing cash balances results entirely from the high cash dividend requirements in each year. Despite these payments, however, Conrail's cash balance remains above $500 million until 1995.

In the low case, Conrail's cash flow reflects the recession and the resulting reduction in net income. The annual increase in cash before interest and dividend payments ranges from a low of $43 million in 1989 to a high of $145 million in 1995. Over the 1988-1995 period, the average annual payment to the government is $218 million, including $64 million in interest on debentures and $154 million in dividends. In 1988 and 1989, a portion of the interest payment and the entire dividend payment come from existing cash balances. In subsequent years, the entire interest payment and a continuously increasing percentage of the dividend payment come from current income. On average, over the 1988-1995 period, $98 million per year in payments to the government comes from current income and $120 million per year comes from existing cash balances. As a result, cash balances that peaked at $1.2 billion in 1987 decline to $243 million by 1995.

Conrail's profitability is much lower and the cash drain for dividend payments is higher in this case than in the base case, but the company's viability would not be in question. Though the years 1987 through 1989 include a recession and the early recovery period, Conrail still maintains a positive net cash flow of $89 million after interest payments but before dividends. Net cash flow after interest and before dividends totals $283 million from 1986 to 1990 and $285 million over the next five years, giving Conrail $568 million in current income to apply to dividend payments in the low-case scenario.

ALTERING THE OPERATING ASSUMPTIONS

The operating assumptions developed in Chapter III are key elements in determining Conrail's viability. The level of the tariff recovery rate and the rate of productivity growth have a much greater effect on the income and cash flow forecasts in each case than do changes in macroeconomic assumptions. Variation in these two rates can have significant effects on Conrail's prospective profitability and viability.

These effects can be demonstrated by comparing the tariff recovery rates and rates of productivity growth selected for the base case and low case in the baseline analysis with different operating variables under alternative scenarios. In Table 20, the CBO baseline is compared with Conrail's own projections, which represent a more optimistic situation, and with a more pessimistic scenario reflecting lower rates for the operating variables.

In the base case, Conrail's assumption of a tariff recovery rate of 80 percent accompanied by annual efficiency increases of 2.0 percent yield much higher levels of net income and cash flow than in the baseline. By 1995, cash balances have risen to $1.6 billion, and total payments to the government over the forecast period equal nearly $3.3 billion. The total effect on Conrail's prospects is to improve income and cash flow by approximately $2 billion over the 10-year period. Values of 60 percent for the tariff recovery rate and 1.0 percent for efficiencies--levels substantially below historical experience--have just the opposite effect and drastically impair Conrail's ability to meet its obligations by 1993. Beginning in 1992, current operations would not provide sufficient cash to meet capital and debt requirements, let alone dividend payments to the government. Cash balances would turn negative in 1993, and Conrail would have to borrow over $100 million to meet that year's dividend payment. Under these operating assumptions, Conrail's viability would come into question in the mid-1990s.

In the low case, the effects are very similar. Values of 80 percent for the tariff recovery rate and 2.0 percent for productivity growth yield an increase in income and cash flow over the period of more than $1.8 billion. Cash at the end of the period is $1.1 billion higher than in the baseline, while cumulative payments to the government are $755 million higher and equal $2.5 billion for the period. Under a more pessimistic scenario with a 40 percent tariff recovery rate and a 1.5 percent rate of productivity growth, cash balances would become negative in 1993. In this scenario, current operations do not provide sufficient cash flow to finance capital and debt requirements after 1987. As a result, all dividend payments and some current capital charges come from existing cash balances in the years 1988 through 1995.

The foregoing examples suggest that the selection of operating variables for estimating Conrail's future operating results will play a crucial role in predictions of its viability. For this reason, the conservative values of 70 percent for the tariff recovery rate and 1.5 percent for the rate of productivity growth were selected for the baseline analysis. Conrail has exceeded both of these values in each year since passage of the Northeast Rail Service Act of 1981. Furthermore, it is unlikely that Conrail would

TABLE 20. PROJECTED EFFECTS OF ALTERNATIVE VALUES FOR OPERATING VARIABLES UNDER BASELINE ASSUMPTIONS (In millions of current dollars)

	Conrail's Forecast		CBO Baseline		Pessimistic Scenario	
Base Case						
Tariff Recovery Rate	80		70		60	
Efficiency Rate	2.0		1.5		1.0	
	1990	1995	1990	1995	1990	1995
Net Income	741	1,000	569	588	396	172
Change in Cash	38	51	-69	-182	-176	-417
Ending Cash Balance	1,393	1,596	1,051	356	708	-889[a]
Payments to Government	355	509	290	330	224	149
Cumulative Payments to Government	3,285		2,480		1,680	
Low Case						
Tariff Recovery Rate	80		50		40	
Efficiency Rate	2.0		2.0		1.5	
	1990	1995	1990	1995	1990	1995
Net Income	538	794	360	468	221	190
Change in Cash	-4	68	-107	-111	-190	-265
Ending Cash Balance	1,203	1,366	815	243	520	-673[a]
Payments to Government	263	403	189	256	132	132
Cumulative Payments to Government	2,505		1,750		1,135	

SOURCE: Congressional Budget Office.

NOTE: Includes Conrail and subsidiaries. Tariff recovery and efficiency rates are percentages.

a. Turns negative in 1993.

continue to seek out and carry traffic that could sustain, on average, rate increases equal to only 60 percent or less of the inflation in its costs. Similarly, if productivity improvements are not forthcoming, the relatively high average cost of Conrail's transportation services would result in the abandonment of some traffic and lines, and their acquisition by a lower-cost competitor or short-line operator. At some point, therefore, the least profitable traffic would have to be forgone, thereby reducing operating costs and capital costs, and commensurately improving net income and cash flow. Conrail has the operating freedom to make these decisions, has not hesitated to make them in the past, and will probably continue to do so. Under reasonable operating assumptions, Conrail is a viable, independent railroad company.

STAND-ALONE VIABILITY

The assumptions made concerning the legal structure of the corporation are based on current law. The baseline scenario assumes that existing legislation remains in force and that no changes are made. The proposals for returning Conrail to private ownership would restructure the corporation financially and maintain it as an independent, or stand-alone, firm. Since this restructuring to a stand-alone configuration would affect Conrail's performance, a stand-alone scenario is examined to compare Conrail under this scenario with that of the baseline.

Conrail could be restructured in a number of ways. The stand-alone scenario adopted here attempts to make the fewest assumptions while preserving the intent of the various proposals currently being considered by the Congress. The following changes from the baseline scenario are assumed:

1. Conrail would be responsible for paying both state taxes and labor protection payments.

2. The federal government would terminate the 1979 financing agreement with Conrail.

3. The federal government would cancel all of Conrail's subordinated debentures, Series A preferred stock, and Series B preferred stock and contribute them to the capital of the corporation while retaining its ownership of 85 percent of Conrail's common stock.

4. Conrail would surrender the use of its existing net operating loss and investment tax credit carryforwards.

The first assumption ends Conrail's exemption from state taxes and the federal payment of labor protection payments, both of which were adopted in NERSA. With this change, the structure of Conrail's operations becomes essentially the same as other major railroads--that is, Conrail benefits from no special operating considerations.

The second and third assumptions eliminate the conditions placed on Conrail's financial operations in the financing agreement and recapitalize the corporation. By eliminating the liabilities of the corporation that are superior to the common stock, the value claimed by the liabilities is added to the value of the common shares.

The final assumption eliminates potential assets of the corporation that correspond directly to the liabilities canceled by the third assumption. Conrail's debentures and preferred stock were received by the government as compensation for the capital contributed to cover Conrail's operating losses and to finance capital acquisitions. The net operating loss carry-forwards and investment tax credits provide tax benefits in recognition of these same losses and investments.

The net effect of canceling both the liabilities and the tax benefits will be reflected in the value of the common stock. Under this stand-alone configuration, Conrail has external long-term liabilities of common stock and collateralized debt. In this scenario, the government would receive tax payments and common stock dividends, whereas in the baseline it received interest payments and preferred stock dividends. This change transfers the value and consideration to be paid from the debentures and preferred stock to the common stock and makes Conrail liable for federal taxes. All of the changes from the baseline to the stand-alone configuration are assumed to begin on January 1, 1987, at the start of Conrail's next fiscal and tax year.

Base Case

The net income and cash flow statements for the stand-alone base case are shown in Table 21. The elements that remain the same between the baseline and stand-alone scenarios are the noncash items, property sales, changes in working capital, capital net of financing, and debt installments. Entries that are new or have changed include labor protection payments, state taxes, net operating income, net income, federal income tax, and dividends.

Labor protection payments are assumed to be $12 million in 1987 and $10 million thereafter. State taxes are projected to be $30 million per year starting in 1987. Since operating expenses and therefore net operating in-

come do not include allowances for these expenses, they must be subtracted from baseline operating income. In addition, net interest no longer includes interest on debentures, so that nonoperating income is higher than that in the baseline. Net income before federal income tax, therefore, now includes labor protection payments and state taxes as expenses and excludes interest on debentures.

Federal income taxes are assumed to be required in this scenario, because the net operating loss and investment tax credit carryforwards are no longer available. CBO estimates that Conrail will book taxes at a rate between 20 percent and 30 percent of net income. Since taxes will be owed, it is assumed that Conrail will attempt to reduce its tax liability by adjusting its financial transactions--for example, by purchasing rather than leasing equipment and by shortening depreciation periods. Rather than calculating these adjustments and Conrail's estimated tax liability, CBO assumed that from an approximate book tax of 25 percent a year, Conrail would pay half of that amount in actual cash tax payments. Annual tax payments are calculated by applying this effective tax rate of 12.5 percent to each year's net income. The resulting tax payments rise steadily from a low of $61 million in 1987 to a high of $81 million in the years 1993-1995.

After-tax net income rises from a low of $426 million in 1987 to a high of $568 million in 1993, and then dips slightly to $564 million in 1995. This compares with a range of $512 million to $604 million and 1995 net income of $588 million in the baseline scenario. The difference occurs because the increase in expenses from labor protection payments and federal and state taxes more than offsets the decrease in expenses from the elimination of interest on debentures.

Dividend payments in the base case are assumed to be $100 million per year in the 1987-1990 period and then rise to $125 million per year in the 1991-1995 period. The resulting change in cash and the effect on cash balances can be seen in the cash flow section of Table 21. The ending cash balance in 1995 is only $15 million below the level at the start of the forecast period, $895 million versus $910 million. The change in cash is becoming increasingly negative, however, so that over half of the dividend payment is coming from existing cash balances at the end of the period.

Low Case

Changes to net income and cash flow in the low case, shown in Table 22, are the same as in the base case except for the level of the dividend payments. Labor protection payments, state taxes, and the effective federal

TABLE 21. STAND-ALONE SCENARIO: BASE CASE
(In millions of current dollars)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
					Net Income						
Net Operating Income	397	418	447	489	497	556	585	600	603	602	603
Operating income	397	418	489	529	537	596	625	640	643	642	643
Labor protection	0	0	12	10	10	10	10	10	10	10	10
State taxes	0	0	30	30	30	30	30	30	30	30	30
Nonoperating Income	45	31	40	44	43	42	42	44	46	44	42
Capital Gains a/	38	14	17	18	18	19	20	20	21	22	23
Net Interest	-21	-14	-8	-9	-12	-15	-17	-18	-18	-23	-28
Interest earned	64	66	76	72	68	64	61	60	59	57	54
Interest paid	85	80	84	81	79	78	78	78	78	80	82
Other	29	30	31	35	37	38	40	42	43	45	47
Net Income Before Federal Income Tax	442	448	487	533	540	599	627	644	649	647	645
Federal Income Tax	0	0	61	67	68	75	78	80	81	81	81
Net Income After Federal Income Tax	442	448	426	466	473	524	549	563	568	566	564

(Continued)

a. Capital gains on property sales.

TABLE 21. (Continued)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
					Cash Flow						
Net Income	442	448	426	466	473	524	549	563	568	566	564
Noncash Items	227	224	221	220	229	241	254	267	282	299	319
Funds from Operations	669	672	647	686	702	765	802	830	850	865	883
Property Sales	65	45	41	41	41	43	44	46	48	50	52
Changes in Working Capital	-95	-21	-25	-30	-35	-40	-45	-47	-49	-51	-53
Total Sources	639	696	663	697	708	767	802	829	849	864	882
Capital Net of Financing	449	383	468	488	508	529	550	573	596	621	646
Debt Installments	126	126	116	113	119	126	135	151	160	163	176
Dividends	0	0	100	100	100	100	125	125	125	125	125
Total Uses	575	509	684	701	727	755	810	849	881	909	947
Change in Cash	64	187	-21	-4	-19	12	-9	-20	-32	-45	-64
Beginning Cash Balance	846	910	1,097	1,075	1,072	1,053	1,065	1,056	1,037	1,004	959
Ending Cash Balance	910	1,097	1,075	1,072	1,053	1,065	1,056	1,037	1,004	959	895

SOURCE: For 1985 Conrail; for 1986-1995, Congressional Budget Office. Capital net of financing and debt installments are from Conrail for 1986.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

TABLE 22. STAND-ALONE SCENARIO: LOW CASE
(In millions of current dollars)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
					Net Income						
Net Operating Income	397	400	327	268	308	361	390	418	436	455	475
Operating income	397	400	369	308	348	401	430	458	476	495	515
Labor protection	0	0	12	10	10	10	10	10	10	10	10
State taxes	0	0	30	30	30	30	30	30	30	30	30
Nonoperating Income	45	38	46	33	31	24	20	21	24	25	27
Capital Gains [a/]	38	14	17	18	18	18	19	19	20	20	20
Net Interest	-21	-7	-2	-19	-22	-30	-36	-36	-34	-34	-34
Interest earned	64	73	83	61	54	42	33	29	26	23	21
Interest paid	85	80	85	80	76	72	69	65	60	58	55
Other	29	30	31	34	35	36	37	38	39	39	40
Net Income Before Federal Income Tax	442	437	373	302	339	386	410	440	461	480	502
Federal Income Tax	0	0	47	38	42	48	51	55	58	60	63
Net Income After Federal Income Tax	442	437	326	264	297	337	359	385	403	420	439

(Continued)

a. Capital gains on property sales.

TABLE 22. (Continued)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
					Cash Flow						
Net Income	442	437	326	264	297	337	359	385	403	420	439
Noncash Items	227	224	219	215	219	226	234	242	251	262	274
Funds from Operations	669	661	545	479	516	564	593	627	654	682	713
Property Sales	65	45	41	41	41	42	43	44	45	46	46
Changes in Working Capital	-95	-21	-22	-23	-23	-24	-25	-30	-35	-40	-45
Total Sources	639	685	565	497	534	581	611	641	664	688	715
Capital Net of Financing	449	383	425	406	459	469	479	489	500	510	521
Debt Installments	126	126	115	111	114	117	123	134	138	135	141
Dividends	0	0	50	50	100	100	100	100	100	100	100
Total Uses	575	509	590	567	673	686	702	723	738	745	762
Change in Cash	64	176	-26	-69	-139	-105	-91	-82	-74	-58	-47
Beginning Cash Balance	846	910	1,086	1,060	991	852	747	657	574	500	443
Ending Cash Balance	910	1,086	1,060	991	852	747	657	574	500	443	396

SOURCE: For 1985 Conrail; for 1986-1995, Congressional Budget Office. Capital net of financing and debt installments are from Conrail for 1986.

NOTE: Includes Conrail and subsidiaries. Historical data for 1985.

a. Capital gains on property sales.

tax rate of 12.5 percent are the same. The dividend payments in the low case are assumed to be $100 million a year except in the recession years of 1987 and 1988 in which they are reduced by half.

Federal income taxes vary between $38 million in 1988 at the trough of the recession and $63 million in 1995. Net income after federal income tax ranges from a low of $264 million in 1988 to a high of $439 million in 1995, slightly higher than the level in 1986. Compared with the low case in the baseline scenario, net income is $90 million lower in 1987 and between $15 million and $29 million a year lower in the rest of the period. The difference is again the result of the net effect of labor protection, interest, and tax changes.

The ending cash balance in 1995 in this case is $396 million, or $514 million below the level at the start of the period. The negative change in cash in 1988 through 1990 exceeds the dividend payment, indicating that some of Conrail's cash requirements must be paid from existing cash balances even before making dividend payments to its owners. For the forecast period as a whole, however, current operations provide sufficient cash flow to cover all current expenses, including taxes, and to produce a total of $285 million for dividend payments.

Viability

Altering the structure of the corporation would not change its viability in either the base or the low case. In the base case, the analysis indicates that Conrail would be capable of paying a nominal dividend in each year of the forecast period while maintaining the real value of the corporation and capital stock, paying full industry wages and taxes, and maintaining its current level of cash holdings. Higher dividend payments could be made in each year by drawing further on cash reserves. With the dip in traffic in the final two years of the forecast period, greater use would be made of existing cash balances to finance dividend payments, which could be of concern in the years beyond the forecast period. Nonetheless, Conrail would pay the federal government, as a common stockholder and taxer of the corporation, over $1.5 billion from current income over the period, including $672 million in tax payments and $871 million in dividends.

In the low case, Conrail's ability to pay dividends from current income is greatly reduced from that in the base case. Though the dividend payment is lower in response to lower output and income, the consumption of cash balances is required to finance 65 percent of total dividend payments in the forecast period. Whereas the trend at the end of the period in the base case

indicated the potential for problems beyond the forecast period, the trend at the end of the period in the low case indicates that the drawing down of cash reserves is abating and that all dividends might be payable soon from current income flows. In this case, then, existing cash balances permit the payment of dividends during the period of reduced traffic in the recession and recovery; and they permit Conrail to rebuild its traffic and financial ability to pay dividends while maintaining such payments in the interim.

This analysis indicates that it is the degree to which the corporation is profitable and the level of dividends it is able to pay that are at issue for Conrail, not whether the company can survive. The viability of Conrail is not in question under either the base case or low case. Conrail would be able to meet all of its current expenses, capital requirements, and tax obligations even if a recession occured as in the low case. In addition, current operations would provide income to pay dividends in both cases.

The uncertainty associated with Conrail's earning potential and its prospective ability to pay a dividend woud affect the value associated with ownership of Conrail stock. These issues of risk and value will be examined in the options section below.

IMPLICATIONS FOR POLICY

The Northeast Rail Service Act of 1981 expressed the intent of the Congress that the freight service provided by Conrail should be returned to the private sector, and that Conrail should be sold as an independent company if it could be made profitable by employing the provisions and reforms contained in the act. As noted previously, Conrail met the two profitability tests contained in NERSA, and the Department of Transportation therefore proposed a plan for returning Conrail to private ownership. This section examines DOT's proposal and several options for selling the government's interest in Conrail in light of the viability analysis above.

In order to simplify analysis of the various options, CBO assumed that Conrail would be restructured in accordance with the stand-alone scenario described above. This assumption would cancel all of Conrail's preferred shares and subordinated debentures and contribute their value to the corporation. As a result, the government's ownership interest in the corporation would be consolidated to 85 percent of the common stock outstanding. The remaining 15 percent would be held by an employee stock ownership plan (ESOP).

DOT's Proposal and Alternatives

Four general options are available to the Congress for selling the government's stock in Conrail: (1) a private, negotiated sale to a single purchaser, (2) a private, negotiated sale to an investor group for eventual resale to the general public, (3) a public sale through a direct stock offering, and (4) retention of the government's stock with an eventual sale at a future date.

The first option is the one selected initially by the Department of Transportation in its proposal to sell Conrail to the Norfolk Southern Corporation. The principal concern of DOT in the sale process has been its belief that Conrail cannot survive as an independent railroad. The department proposed a sale to a single purchaser with a commitment to maintaining Conrail's services rather than a public sale because of the uncertainties a public sale would entail concerning Conrail's future level of service and survival. Consequently, the proposed sale to Norfolk Southern was designed both to provide Conrail with a strong corporate parent capable of providing financial assistance and to maintain Conrail's current level of service for the next five years by covenants in the sale proposal.

Options two through four are predicated on the assumption that Conrail can survive and remain profitable as an independent company and that Conrail's stock would therefore be attractive to investors. Each option proposes an eventual sale of Conrail's common stock to the public. They differ from each other principally in the process used to determine the value of the government's stock and who bears the risk in that process. The following sections examine the four options for the nature of the risk borne by the government in each proposal, and then consider possible methods for estimating an economic value for the corporation.

Risk

The risks perceived by each party in the transfer process will depend on their goals in the sale and in the subsequent operation of Conrail. The goals of the government--continuing service, maximizing the return to the government, and ensuring Conrail's future survival--and the goals of potential investors, principally maximizing the return on their investment, may conflict. Moreover, since Conrail's future performance and profitability cannot be predicted with certainty, any method for transferring the firm to the private sector entails risks for all parties concerned.

Option 1: Private Sale to a Single Purchaser. If patterned after the Norfolk Southern proposal, this option would reduce the risk of the loss of Conrail's

services in the next five years and provide the government with an assured price for its share in the corporation. However, the chances that Conrail's service level would decline over the next five years appear slight. On the other hand, this option would carry a higher risk that the government might not receive the maximum return on its investment and that service in the long run might be reduced. A reduction in service could have occurred under a sale to Norfolk Southern because of a loss of competition that would lead to a reduction in the output and increase in the price of rail services in the Conrail region.

Option 2: Private Sale to an Investor Group. This option is similar to the first in that the price the government receives would be assured and that restrictions on ownership and control could be negotiated to reduce the risk of service losses in the near term, even if this risk is minimal. This option would also pose the risk that the government might not maximize the return from its investment in Conrail. In both Options 1 and 2, the government could transfer the risk in valuing the corporation to the buyer.

Option 3: Public Sale. Selling Conrail through a direct stock offering would reduce the certainty of the price to be paid to the government but would increase the probability that the government would maximize its return. The risk of service reductions would be higher under this option, because the private stockholders may place a higher value on maximizing profits than would the government, and would not be bound by the restraints negotiated in the first two options.

Option 4: Temporarily Retaining the Government's Stock in Conrail. This option would permit Conrail to establish a more complete picture of its operating potential than is provided by the few years of profitability since the company's restructuring under NERSA. Consequently, the potential for the government to maximize its return would increase if the uncertainties surrounding Conrail's potential profitability were reduced. However, the government would bear the risk that the price could fall in the event of a poor showing by either Conrail or the stock markets in general. The risk of service reductions would be greatly reduced in this option.

Each of the options above is affected by the question of Conrail's viability. If Conrail's viability is in question, the government may wish to pursue Options 1 and 2, in which restrictions on the activities of the firm may be negotiated that would permit some guarantees of the level of service Conrail provides in the future. Absent concerns about Conrail's survival, Options 3 and 4 may provide a higher return to the government while not greatly increasing the risk of service losses.

Investors' perceptions of Conrail's potential profitability will determine the price they are willing to pay for its stock. While this study shows that Conrail appears viable over the next decade, the degree of its profitability depends on the macroeconomic and operating assumptions applied in the forecast. Hence, while Options 2, 3, and 4 are viable options for Conrail, the government's return under each would depend on the perceptions of the purchasers.

Value

The value of the benefits associated with the government's holdings of Conrail stock will vary according to the method used to calculate the value of the corporation, and many alternative methods exist for making this valuation. In addition, application of identical methods by both the government and potential investors may lead to different prices because of differing assumptions or perceptions of Conrail's future. This section examines two methods for obtaining rough approximations of Conrail's value: estimating the present discounted value of Conrail's future dividend payments, and imputing the company's total value using price-earnings ratios and the potential earnings of the firm.

Discounted Present Value. The first method is to estimate the present discounted value of Conrail's future dividend payments. The benefit of common stock in Conrail is that it confers the right to a portion of Conrail's future dividend stream. By discounting to the present the total value of that stream of payments, a value could be placed on the right to receive those payments and, therefore, on the total stock of the corporation. A real discount rate (corrected for inflation) of 2 percent is used in this analysis.

The actual future dividend streams and additional retained earnings that Conrail will produce cannot be predicted accurately because of the many uncertainties associated with Conrail's future operations. In this section, three alternative operating results--similar to those in Table 20--are used to illustrate alternative outcomes for Conrail's profitability under both the status quo (baseline) and stand-alone assumptions. These three cases are referred to as high, base, and low. The high and base cases are both constructed using the base-case traffic forecast in Chapter II and tariff recovery rates of 0.8 and 0.7, respectively, and productivity growth rates of 2.0 percent and 1.5 percent. The low case uses the traffic forecast of the low case and a tariff recovery rate of 0.4 and productivity rate of 2.0 percent. Table 23 shows net income, the change in cash, and the ending cash balance in 1995 for each case under both the status quo and stand-alone assumptions.

In order to calculate the true present value of the dividend stream for each case, the operating results for Conrail and the associated dividends would need to be forecast well beyond the year 2000. Since it is not feasible to estimate so distant an outcome, the discounted stream for the forecast period is calculated in each case and a salvage value for Conrail is estimated for the year 1995. The salvage value represents the value of the Conrail system in 1995 after the dividend stream from the forecast period has been paid and as such represents the value of the common stock to the holders at that time. This salvage value is then discounted to the present and added to the discounted value of the dividend stream to give the present worth of the stream of payments by Conrail under the two ownership

TABLE 23. PROJECTIONS OF CONRAIL'S OPERATING RESULTS IN 1995 FOR ALTERNATIVE SCENARIOS AND CASES (In millions of 1995 dollars)

	High Case	Base Case	Low Case
Status Quo			
Net Income	1,000	588	364
Change In Cash	51	-182	-168
Ending Cash Balance	1,596	356	-119 [a]
Payment to Government	509	330	209
Stand Alone			
Net Income	954	564	341
Change in Cash	325	-64	-145
Ending Cash Balance	2,775	895	-162 [b]
Dividend Payment	125	125	100

SOURCE: Congressional Budget Office.

NOTE: The high-profitability case assumes the base-case macroeconomic forecast, a tariff recovery rate of 80 percent, and an efficiency rate of 2.0 percent. The base case assumes the base-case macroeconomic forecast, a tariff recovery rate of 70 percent, and an efficiency rate of 1.5 percent. The low-profitability case assumes the low macroeconomic forecast, a tariff recovery rate of 40 percent, and an efficiency rate of 2.0 percent.

a. Turns negative in 1995.

b. Turns negative in 1994.

scenarios. Both the stream of dividend payments and the salvage value are calculated in real 1985 dollars at a real discount rate of 2 percent.

The salvage value in 1995 can be estimated by taking the trend of the current value of the assets represented by the common stock. A rough approximation of that current value can be made by subtracting from the value of all assets the value of all liabilities except stockholders' equity. In the stand-alone scenario, stockholders' equity is only the common stock; under the status quo, it includes preferred stock and additional paid-in capital as well as the common stock. The discounted 1995 salvage value varies from $971 million to $3.9 billion, depending on the macroeconomic assumptions. In the low case, salvage value would be closer to liquidation value, while in the high case it would be closer to the current asset value of the railroad.

If the status quo were maintained, the federal government would own all of Conrail's preferred stock and 85 percent of its common stock, and an ESOP would hold the remaining 15 percent of the common stock. Under the terms of the financing agreement between Conrail and USRA, dividends on the common stock cannot be paid until the preferred stock is retired. Since this retirement will not occur during the forecast period, the only payments made by Conrail would be those to the government for interest on debentures, dividends on preferred stock and, in the high case, to retire some principal amount of the outstanding debentures. In the stand-alone scenario, dividends would be paid on the common stock to both the federal government and the ESOP.

Table 24 shows the present value of the income streams and salvage value under the three cases for both the status quo and stand-alone scenarios. In all six cases, the final value of the firm has been equated by adjusting the final cash balance to equal $500 million. The resulting cash surplus or deficit is discounted to the present and added to the dividend stream.

Under the status quo, the federal government could receive interest and dividend streams worth between $600 million and $2.8 billion and a 1995 salvage value of between $1.0 billion and $3.9 billion, for totals of between $1.6 billion and $6.7 billion. These numbers bracket what Conrail is worth to federal taxpayers now.

In the stand-alone scenario, 85 percent ownership of the corporation could entitle stockholders to a dividend stream worth between $150 million and $1.7 billion and a salvage value of between $1.0 billion and $3.9 billion, for a total of between $1.1 billion and $5.6 billion. The latter range

brackets the value of Conrail to private owners if it were sold. In addition, in this scenario the government would receive a tax stream valued at between $290 million and $655 million, amounts that bracket the value of Conrail to taxpayers even if the company was sold.

From the standpoint of federal taxpayers, the restructuring of Conrail and the sale of its common stock would eliminate the potential income streams of between $1.6 billion and $6.7 billion. In return, Conrail would produce potential tax streams of between $290 million and $655 million. The net difference between these values for each case--from $1.3 billion to $6 billion--gives the amount of money that would make the sale of the stock and the continuation of current policy equally attractive. Therefore, if this method were used to value the corporation, the government would expect to receive between $1.3 billion and $6.0 billion for its stock.

TABLE 24. REAL DISCOUNTED VALUE OF POTENTIAL GOVERNMENT RECEIPTS FOR ALTERNATIVE SCENARIOS AND CASES
(In millions of 1985 dollars)

	High Case	Base Case	Low Case
	Status Quo		
Federal Receipts	2,778	1,658	624
Salvage Value	3,901	2,803	971
Total	6,679	4,461	1,595
	Stand Alone		
Federal Dividends	1,709	810	147
Salvage Value	3,901	2,803	971
Total	5,610	3,613	1,118
Federal Tax Receipts	655	480	290

SOURCE: Congressional Budget Office.

NOTE: The high-profitability case assumes the base-case macroeconomic forecast, a tariff recovery rate of 80 percent, and an efficiency rate of 2.0 percent. The base case assumes the base-case macroeconomic forecast, a tariff recovery rate of 70 percent, and an efficiency rate of 1.5 percent. The low-profitability case assumes the low macroeconomic forecast, a tariff recovery rate of 40 percent, and an efficiency rate of 2.0 percent.

Valuing Conrail Using P/E Ratios. An alternative method of valuing Conrail would be to impute the total value of the corporation using price-earnings (P/E) ratios and the potential earnings of the firm. The P/E ratio is the ratio of the value of a firm's stock to its profits. A P/E ratio takes into account a company's current and future earning power along with numerous other considerations including its financial structure, debt levels, cash flow, dividend policy, and the quality of its management. For stocks in which a market already exists, the judgment and decisions of individual investors, taken together, determine the market value of the firm, and a P/E ratio can be easily calculated using the firm's earnings. A high ratio suggests that investors are optimistic, and vice versa. Working backward in the case of Conrail, the forecasted level of Conrail's future earnings could be used to construct a price range for the firm by applying a range of P/E ratios.

TABLE 25. CURRENT VALUE OF THE GOVERNMENT'S COMMON STOCK IMPLIED BY PRICE-EARNINGS RATIOS AND BY PROJECTIONS OF REAL NET INCOME
(In millions of 1985 dollars)

	Average Annual Real Net Income a/	Price-Earnings Ratio						
		6	7	8	9	10	11	12
High Case	482	2,458	2,868	3,278	3,687	4,097	4,507	4,916
Base Case	360	1,836	2,142	2,448	2,754	3,060	3,366	3,672
Low Case	233	1,188	1,386	1,584	1,782	1,981	2,179	2,377

SOURCE: Congressional Budget Office.

NOTE: This table presents only 85 percent of the total value of Conrail since the government owns only 85 percent of its common stock. Values (v) are calculated by the following formula: v = .85 x (P/E) x (Average Real Net Income).

NOTE: The high-profitability case assumes the base-case macroeconomic forecast, a tariff recovery rate of 80 percent, and an efficiency rate of 2.0 percent. The base case assumes the base-case macroeconomic forecast, a tariff recovery rate of 70 percent, and an efficiency rate of 1.5 percent. The low-profitability case assumes the low macroeconomic forecast, a tariff recovery rate of 40 percent, and an efficiency rate of 2.0 percent.

a. Average real net income on a book tax basis over the forecast period serves as a proxy for earnings.

Table 25 lists various price-earnings ratios and applies them to Conrail's average real net income on a book tax basis over the forecast period for the three cases in the stand-alone scenario. 1/ Representative P/E ratios of between 6 and 12 are used since the average railroad price-earnings ratio ranged between these values from 1976 through 1984. Exactly where on this range railroad stocks might be at the time of the sale would depend on all of the uncertainties that determine the prices of railroad stocks as well as other stocks. The values range from a low of $1.2 billion to a high of $4.9 billion

While the range of possible market values for Conrail derived by the two methods above are large, they are similar to the ranges one would expect in applying these methods to any firm of Conrail's size. The forecast of the operating and financial condition of any firm involves so many variables and so much uncertainty that assessments of market values by individual investors will extend over a wide range. Indeed, stocks on the stock market exhibit a range of price-earnings ratios much wider than the 6 to 12 band used here, reflecting in part this uncertainty.

Whether a discounted present value or a price-earnings ratio method is used, the range of values for the government's interest in Conrail as a stand-alone firm are similar. The discounted present value technique yields a range of $1.1 billion to $5.6 billion, while the P/E technique yields a range of $1.2 billion to $4.9 billion.

1. The use of "book tax basis" reflects the fact that Conrail's tax depreciation defers taxes rather than cancels them. Some of Conrail's apparent cash earnings, therefore, are effectively borrowed from its future income. In the absence of deflation, however, and if Conrail's investment program does not decline, this borrowing from the future continues indefinitely. The use of book tax basis avoids assuming this indefinite shifting of taxes to the future and provides a conservative estimate of Conrail's income.

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